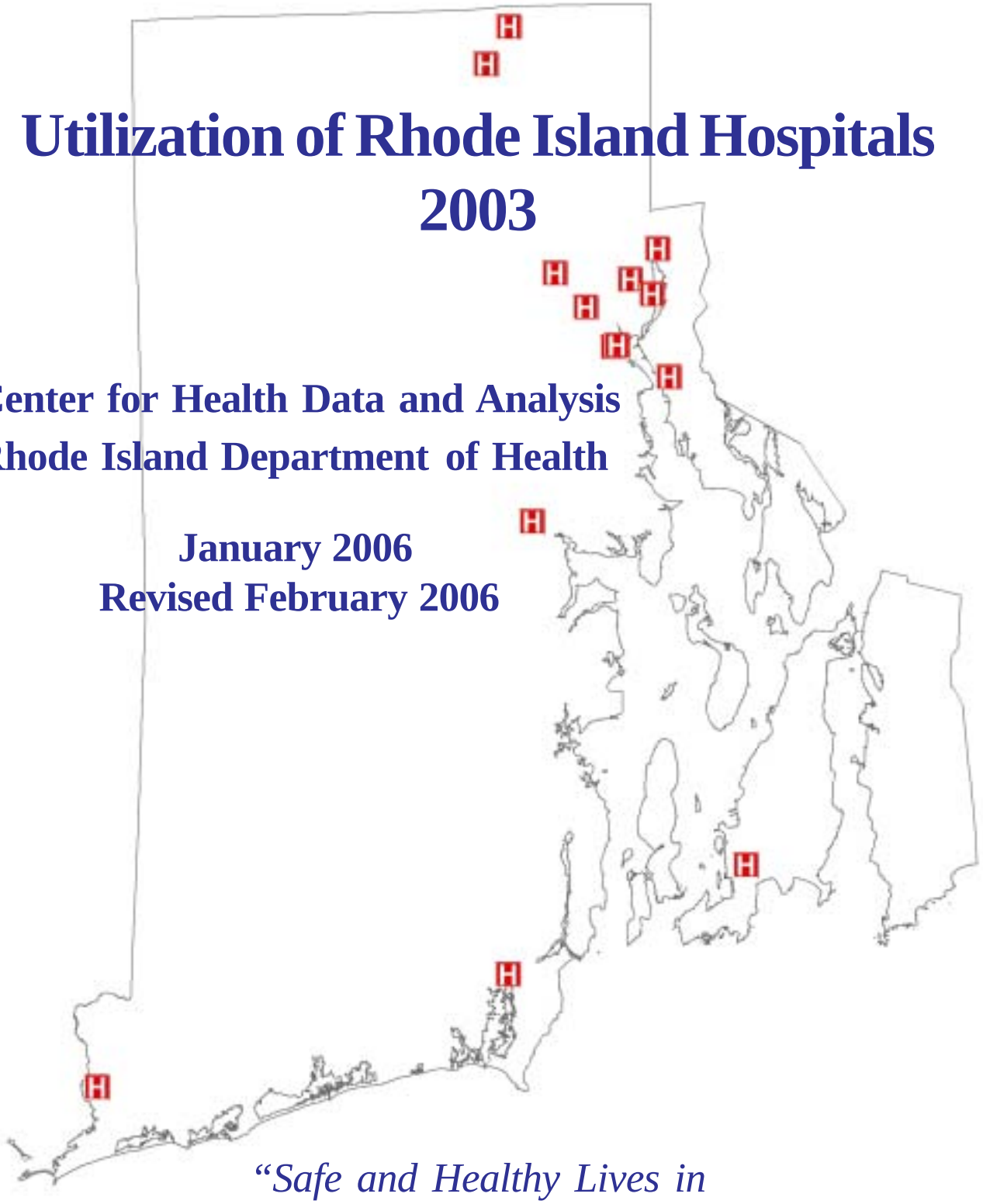
Utilization of Rhode Island Hospitals 2003



Center for Health Data and Analysis
Rhode Island Department of Health

January 2006
Revised February 2006

"Safe and Healthy Lives in Safe and Healthy Communities"

Donald L. Carcieri
Govenor

David R. Gifford, MD, MPH
Director of Health

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Prepared by:

Susan A. Oberbeck, MSW, MHA
Karen A. Williams, MPH
Kathleen E. Taylor

"Safe and Healthy Lives in Safe and Healthy Communities"

Preface

This publication, "Utilization of Rhode Island Hospitals 2003," summarizes inpatient utilization data reported to the Rhode Island Department of Health by the state's private acute care and inpatient rehabilitation hospitals during the period January 1, 2003, through December 31, 2003. It has been produced as a reference document for health care policy makers and representatives of health plans and health plan purchasers, as well as other interested parties in the state.

Acknowledgments

The reporting of the information on which this document is based involves the careful effort of many staff persons in the state's private, acute-care hospitals. Their commitment to producing complete, accurate data is essential to the usefulness of this information system and is acknowledged with gratitude by the authors. The efforts of the Hospital Association of Rhode Island and its contractor, Solucient, Inc., in coordinating the editing and submission of data from the state's eleven acute-care general hospitals are also greatly appreciated. The contributions of these participants are key elements of the public/private partnership supporting the state's hospital discharge data system.

The authors also thank Janice Fontes for her oversight and maintenance activities in support of the hospital discharge database for the Center for Health Data and Analysis and for her computer programming efforts in support of this report.

For Additional Information

The Rhode Island Department of Health website (http://www.health.ri.gov) has additional information on the hospital discharge database. Information on how to obtain a public use data file may be obtained at http://www.health.ri.gov/chic/statistics/hdd.php.

Statistics from Rhode Island hospital discharge data for 2003 are available on HCUPnet, an online query system, developed as part of the Healthcare Cost and Utilization Project, at http://hcup.ahrq.gov/HCUPnet.asp.

Information on hospital financial performance may be obtained at http://www.health.ri.gov/chic/performance/index.php.

Information on the quality of hospital care may be obtained at http://www.health.ri.gov/chic/performance/series.php.

Comments, suggestions, and requests for other information may be addressed to:

Karen Williams, MPH, Public Health Epidemiologist Karen.Williams@health.ri.gov or
Janice Fontes, MA, Principal Systems Analyst JaniceF@doh.state.ri.us
Rhode Island Department of Health
Center for Health Data and Analysis, Room 407
Three Capitol Hill
Providence, Rhode Island 02908
(401) 222-2550

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EXECUTIVE SUMMARY

Utilization of Rhode Island Hospitals 2003 summarizes data from the Rhode Island Hospital Discharge Database on hospital inpatient stays during the period January 1, 2003 - December 31, 2003. These data were submitted from Rhode Island's 14 non-Federal short-stay hospitals, including -

- 5 teaching hospitals providing general acute care
- 6 other general acute-care hospitals
- 2 psychiatric teaching hospitals
- 1 rehabilitation hospital

Key Findings

Summary Measures:

- There were 126,784 discharges (non-newborn) with 689,249 days of care.
- The statewide occupancy rate was 59.6% for licensed beds and 77.4% for staffed beds.
- The average length of stay was 5.4 days.
- Rhode Island's hospital discharge rate was 1,144.9 per 10,000 population, less than the United States rate of 1,199.7.

Demographics:

- There were many more women (75,770) than men (51,012) among inpatients, but women had shorter stays (average 5.1 days) than men (5.9 days).
- Discharge rates increased with age, from 35.2 per 1,000 population for ages 0-14 to 338.9 per 1,000 for ages 65 and older.
- Patients age 65 and over accounted for 41.1% of all discharges and used 45.8% of all days of care.

Principal Diagnoses:

- The most commonly reported categories of principal diagnoses were -
  - Heart disease (15,579 discharges)
  - Deliveries of newborn infants (13,451 discharges)
  - Psychoses (9,585 discharges)
  - Malignant neoplasms (5,231 discharges)
- Disease-specific discharge rates per 10,000 population in Rhode Island differed from national rates as follows:
  - Mental disorders were 38.8% higher
  - Major depression was 59.4% higher
  - Essential hypertension was 81.1% lower
  - Diabetes mellitus was 29.1% lower
  - Deliveries were 14.0% lower
  - Heart disease was 7.6% lower

Procedures:

- 77,063 discharges (60.8%) had at least one surgical or major diagnostic procedure.
- For males, the 3 most common procedures were -
    - Arteriography and angiocardiography using contrast material (7,041 procedures)
    - Transfusion of blood and blood components (5,399 procedures)
    - Cardiac catheterization (3,036 procedures)
- For females, the 3 most common procedures were -
    - Transfusion of blood and blood components (6,922 procedures)
    - Repair of obstetric laceration (5,755 procedures)
    - Arteriography and angiocardiography using contrast material (4,637 procedures)

Hospital Charges:

- The average charge per discharge was $17,576.

Deliveries:

- There were 13,476 deliveries of newborns performed.
- The primary cesarean rate was 19.8%; the overall cesarean section rate was 27.6%.

Injuries:

- There were 6,167 discharges with a principal diagnosis of injury and poisoning.
- The leading causes of external injuries were -
    - Falls (3,137 discharges)
    - Motor vehicle traffic injuries (835 discharges)
    - Self-inflicted injuries (541 discharges)

INTRODUCTION

This report provides statistics regarding the use of Rhode Island's non-Federal short-stay hospitals during the period January 1, 2003 - December 31, 2003. The data for this report came from 100% reporting of inpatient records by all non-Federal short-stay hospitals in the state. Definitions of terms and groupings used in this report can be found in the Definition of Terms section of this report. Data tables 1-20 for Figures 1-14 are listed on Page 18 and illustrated on pages 19-32. Additional technical documentation can be found in Appendices 1-6.

SUMMARY STATISTICS BY HOSPITAL

- **14 non-federal short-stay hospitals in Rhode Island report hospital discharge data. [Table 1]**

- **Hospitals vary in size and occupancy.**

  - The number of licensed beds ranges from 60 to over 700. [Table 2]

  - The all-hospital staffed occupancy rate is 77.4%. For individual hospitals, it ranges from 62.0% to 97.3%. [Figure 1]

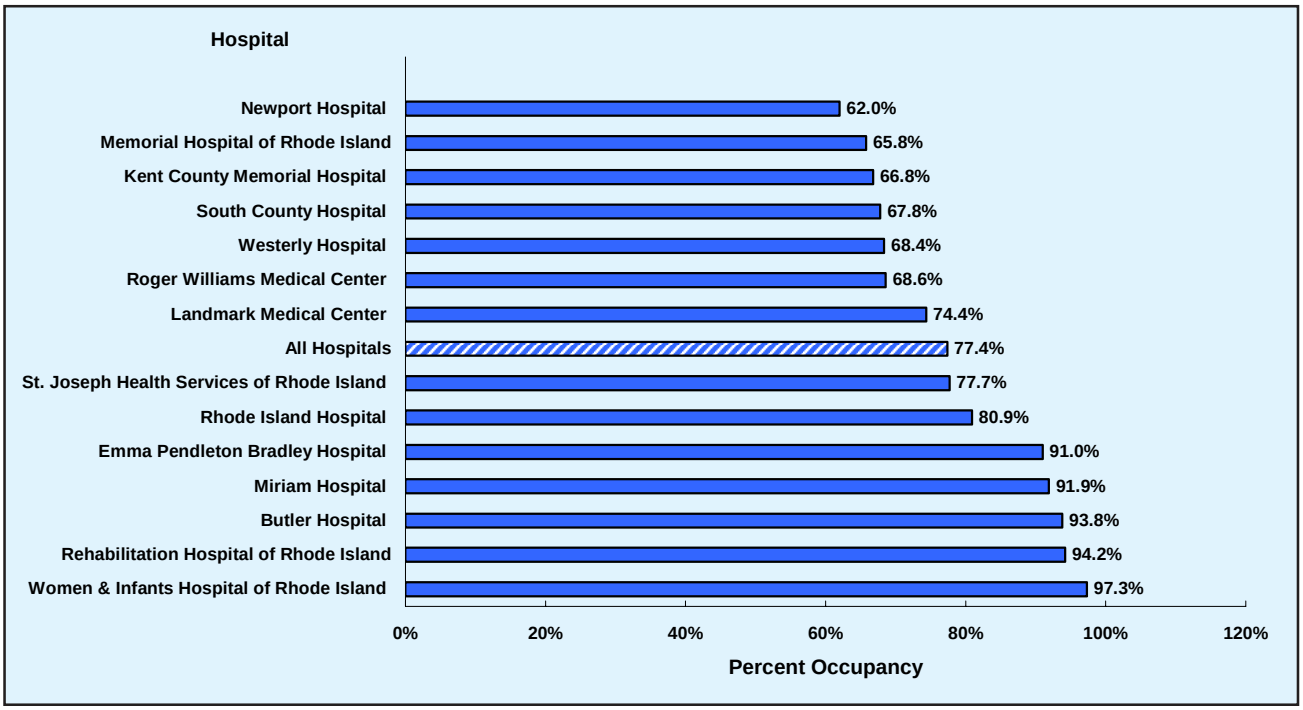

Figure 1. Staffed Occupancy Rate by Hospital, Rhode Island, 2003

- **Hospitals vary in average length of stay and average charges.**

    - The average length of stay of the 126,784 discharges is 5.4 days, ranging among hospitals from 3.6 to 20.7 days. [Table 3]

    - The all-hospital average charge per discharge is $17,576, ranging among hospitals from $8,944 to $26,345. [Figure 2]

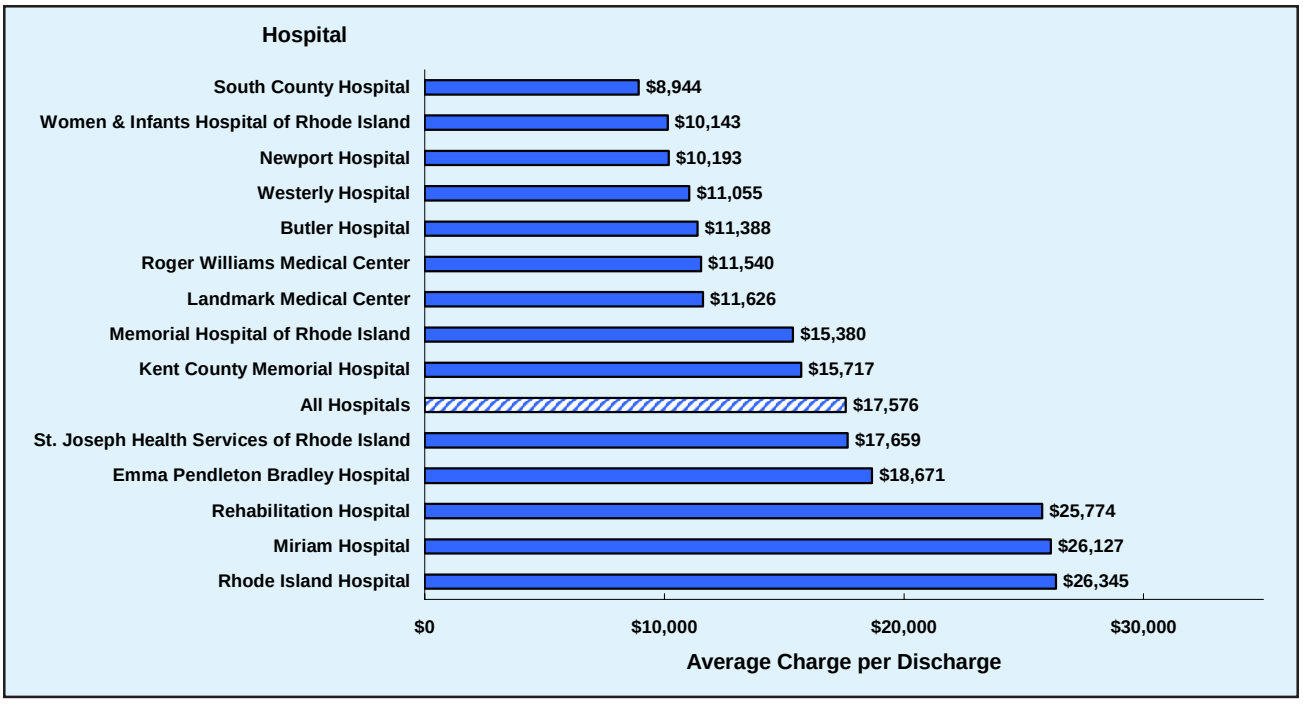

Figure 2. Average Charge per Discharge by Hospital, Rhode Island, 2003

UTILIZATION BY AGE GROUP AND GENDER

- **The elderly (ages 65 and older) are the heaviest users of inpatient care. They are only 14% of the state's population, <u>but</u> –**
  - They are 41.1% of all inpatients. [Figure 3]
  - They use nearly half (45.8%) of all inpatient days. [Figure 4]
  - They stay in the hospital longer than patients who are under age 65. [Table 4]

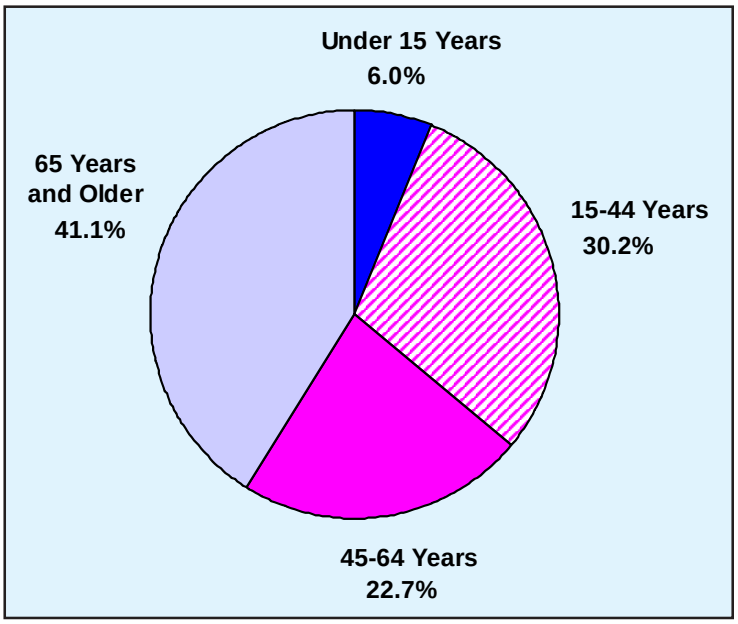

Figure 3. Percent of Total Discharges by Age, Rhode Island, 2003

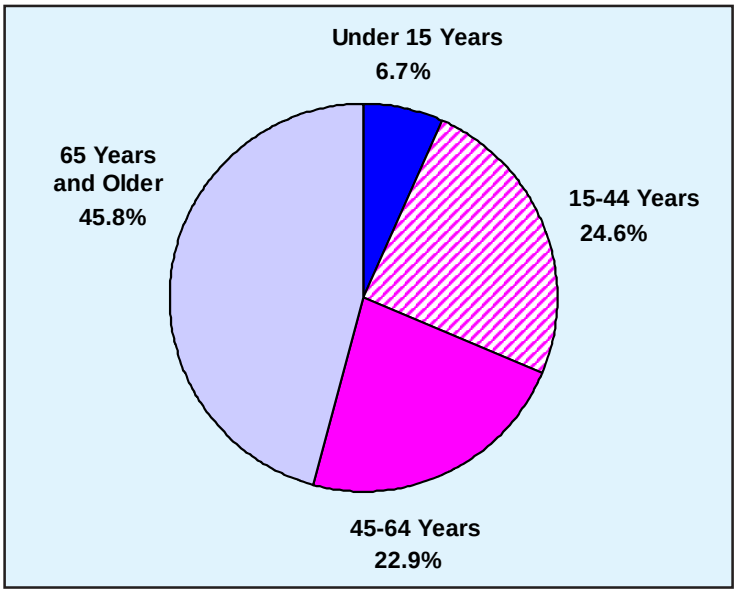

Figure 4. Percent of Total Hospital Utilization (Days) by Age, Rhode Island, 2003

- **Women use more care than men.**
  - They have more admissions and use more inpatient days than men. [Table 5]
  - Their greater use is because of the increased hospitalizations during the child-bearing years, ages 15-44. [Figures 5 and 6]

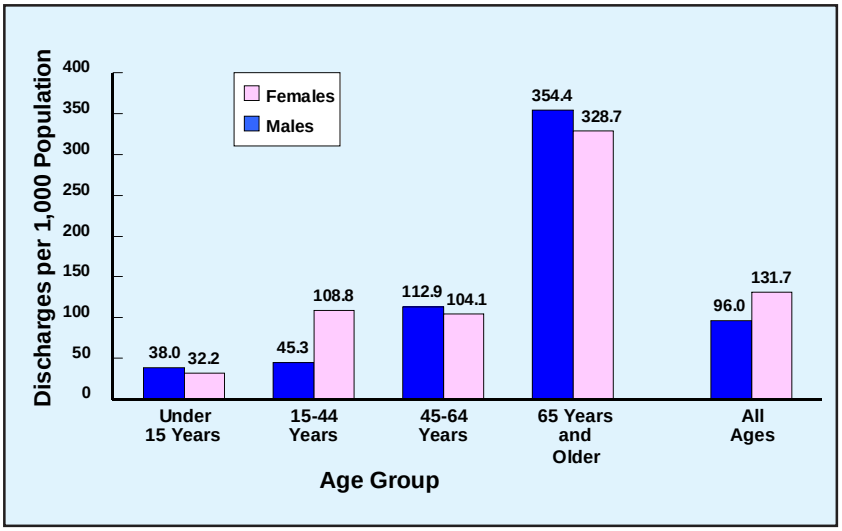

Figure 5. Hospital Discharge Rate per 1,000 Population by Age Group and Gender, Rhode Island, 2003

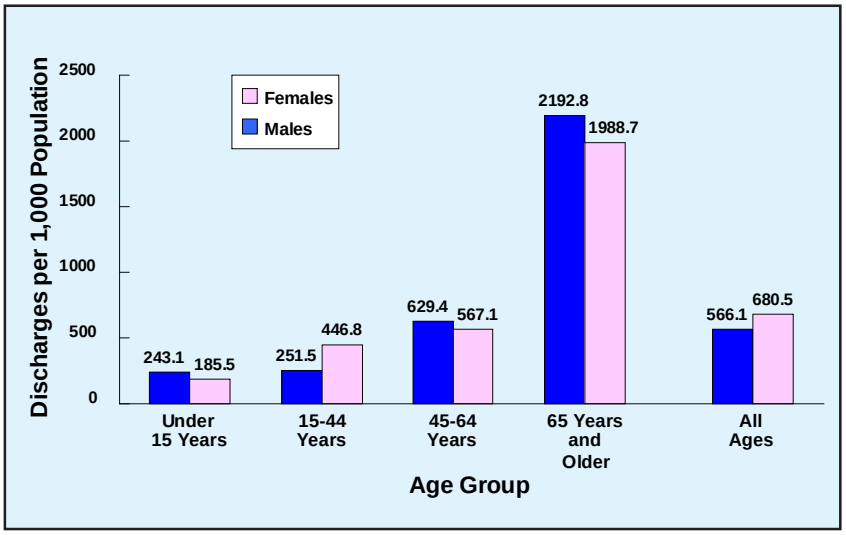

Figure 6. Utilization Rate (Days) per 1,000 Population by Age Group and Gender, Rhode Island, 2003

DISCHARGES BY DIAGNOSIS GROUP

- **The most common reasons for patients to be admitted are [Tables 6 and 7] –**
    - Heart disease,
    - Deliveries of newborns,
    - Psychoses, and
    - Malignant neoplasms.
- **The most common reasons for admission are similar for men and women. [Table 7 and Figure 7]**
    - Among women, newborn deliveries are the most common reason overall.
    - Excluding deliveries, heart disease, psychoses, malignant neoplasms, and pneumonia are the most common reasons for admission, in that order, for both men and women.

Rank of Diagnosis Category	Females		Males		All Patients	
	Diagnosis Category	Number of Discharges	Diagnosis Category	Number of Discharges	Diagnosis Category	Number of Discharges
First	Deliveries	13,451	Heart disease	8,079	Heart disease	15,579
Second	Heart disease	7,500	Psychoses	4,504	Deliveries	13,451
Third	Psychoses	5,081	Malignant neoplasms	2,387	Psychoses	9,585
Fourth	Malignant neoplasms	2,844	Pneumonia	2,238	Malignant neoplasms	5,231
Fifth	Pneumonia	2,555	Cerebrovascular disease	1,497	Pneumonia	4,793

Figure 7. Most Common Diagnoses (First-Listed) by Gender, Rhode Island, 2003

- **The most common reasons for admission are the same in Rhode Island and the United States. [Table 8 and Figure 8]**

    - Heart disease, deliveries, and psychoses (in descending order) are the three most common reasons in both areas.

    - The rate of hospitalization for psychoses is much lower nationally than in Rhode Island.

    - The rate of hospitalization for essential hypertension is 81.1% lower in Rhode Island than nationally.

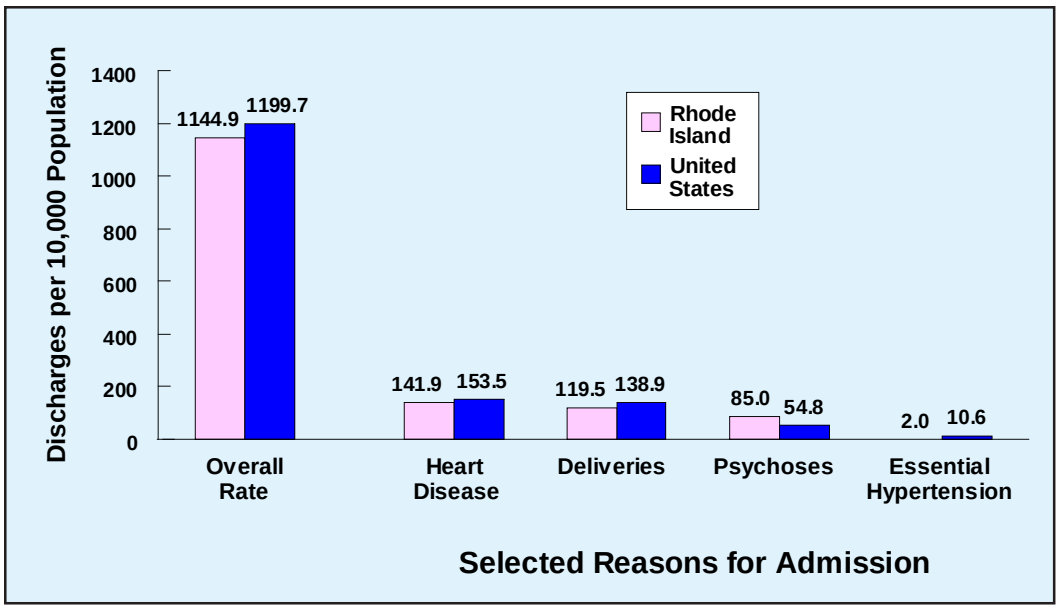

Figure 8. Hospital Discharge Rate per 10,000 Population by Selected First-Listed Diagnoses, Rhode Island and United States, 2003

- **There are few differences in average length of stay by gender or region.**

    - In Rhode Island, average length of stay is similar among males and females, other than for schizophrenic disorders and benign neoplasms. [Table 9]

    - Average length of stay is usually slightly higher for Rhode Island than for the US. [Table 10]

UTILIZATION OF SURGICAL AND DIAGNOSTIC PROCEDURES

- **The most common procedures performed are [Table 11] -**
  - Transfusion of blood and blood components,
  - Arteriography and angiocardiography using contrast material,
  - Repair of obstetric laceration, and
  - Cardiac catheterization.
- **The most common procedures differ for men and women. [Table 12 and Figure 9]**
  - Arteriography and angiocardiography using contrast material is the most common procedure among men and ranks third among women.
  - Transfusion of blood and blood components is the leading procedure among women and the second most common procedure among men.
  - Two obstetrical procedures, repair of current obstetric laceration and cesarean section, are the second and forth most common procedures among women, respectively.

Rank of Procedure Category	Females		Males		All Patients	
	Procedure Category	Number of Procedures	Procedure Category	Number of Procedures	Procedure Category	Number of Procedures
First	Transfusion of blood and blood components	6,922	Arteriography and angiocardiography using contrast material	7,041	Transfusion of blood and blood components	12,321
Second	Repair of current obstetric laceration	5,755	Transfusion of blood and blood components	5,399	Arteriography and angiocardiography using contrast material	11,678
Third	Arteriography and angiocardiography using contrast material	4,637	Cardiac catheterization	3,036	Repair of current obstetric laceration	5,755
Fourth	Cesearean section	3,728	Respiratory therapy	2,411	Cardiac catheterization	4,919
Fifth	Diagnostic ultrasound	2,644	Diagnostic ultrasound	2,251	Diagnostic ultrasound	4,895

Figure 9. Most Common Procedures (All-Listed) by Gender, Rhode Island, 2003

FREQUENCY OF PERFORMANCE FOR SELECTED SURGICAL PROCEDURES

- **Only some hospitals performing procedures for which evidence supports a volume-outcome relationship meet recommended minimum frequency thresholds cited by the Agency for Healthcare Research and Quality (AHRQ) (See Appendix 3). [Figure 10]**

    - The only two hospitals performing adult cardiac procedures, (coronary artery bypass graft and percutaneous transluminal coronary angioplasty), meet the recommended minimum thresholds for those procedures. [Table 13]

    - None of the hospitals performing pediatric heart surgery or esophageal resection for malignant neoplasms meet the recommended minimum volume threshold. [Tables 14 and 15]

    - Some hospitals performing pancreatic resection for malignant neoplasms, abdominal aortic aneurysm repair, and carotid endarterectomy meet the recommended minimum threshold. [Tables 15 and 16]

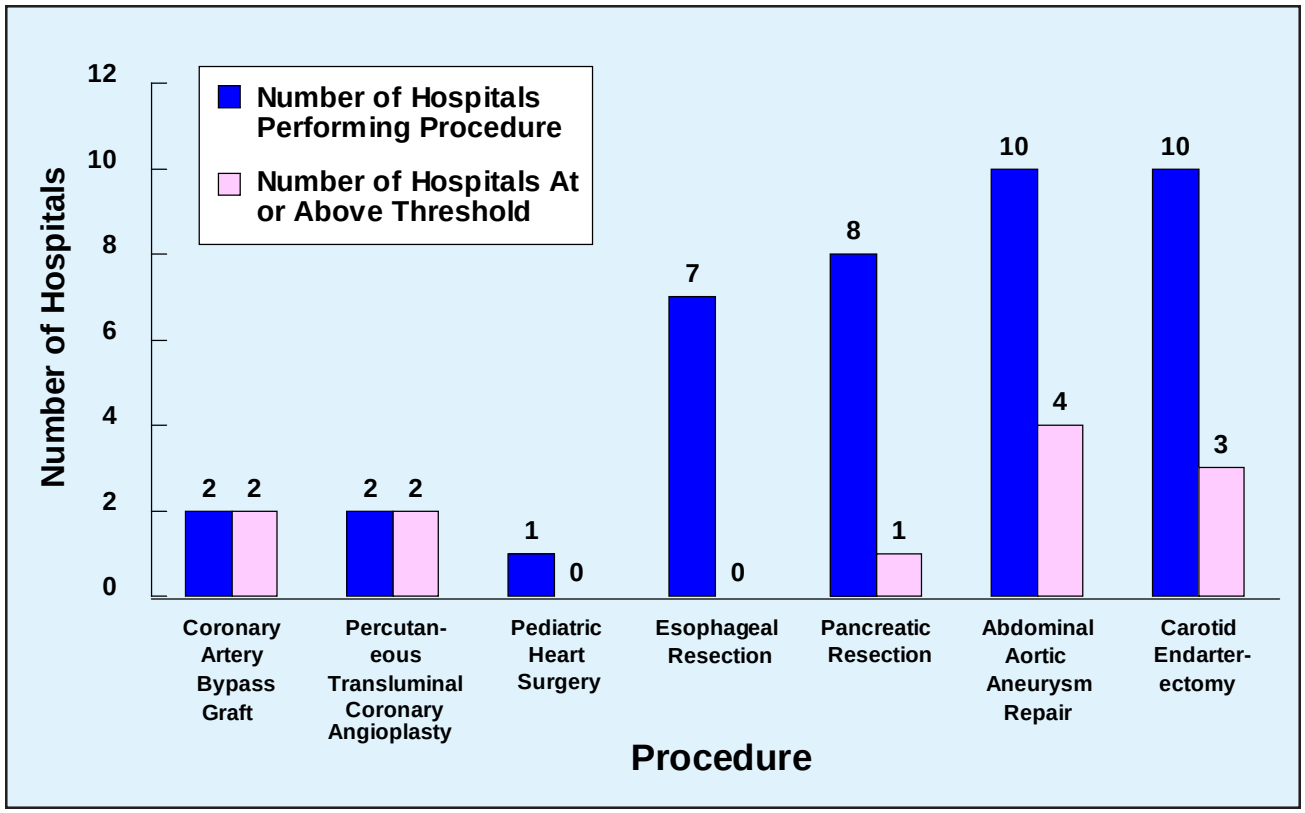

Figure 10. Number of Hospitals Performing Selected Surgical Procedures and Number of Hospitals Meeting AHRQ Recommended Threshold Based on 2000-2003 Average, Rhode Island

DISCHARGES BY GROUPED CHARGES

- **Half (50.5%) of discharges have a charge of less than $10,000. [Tables 3 and 17, Figure 11].**
    - The average charge per discharge is $17,576.
    - The median charge is $9,904.

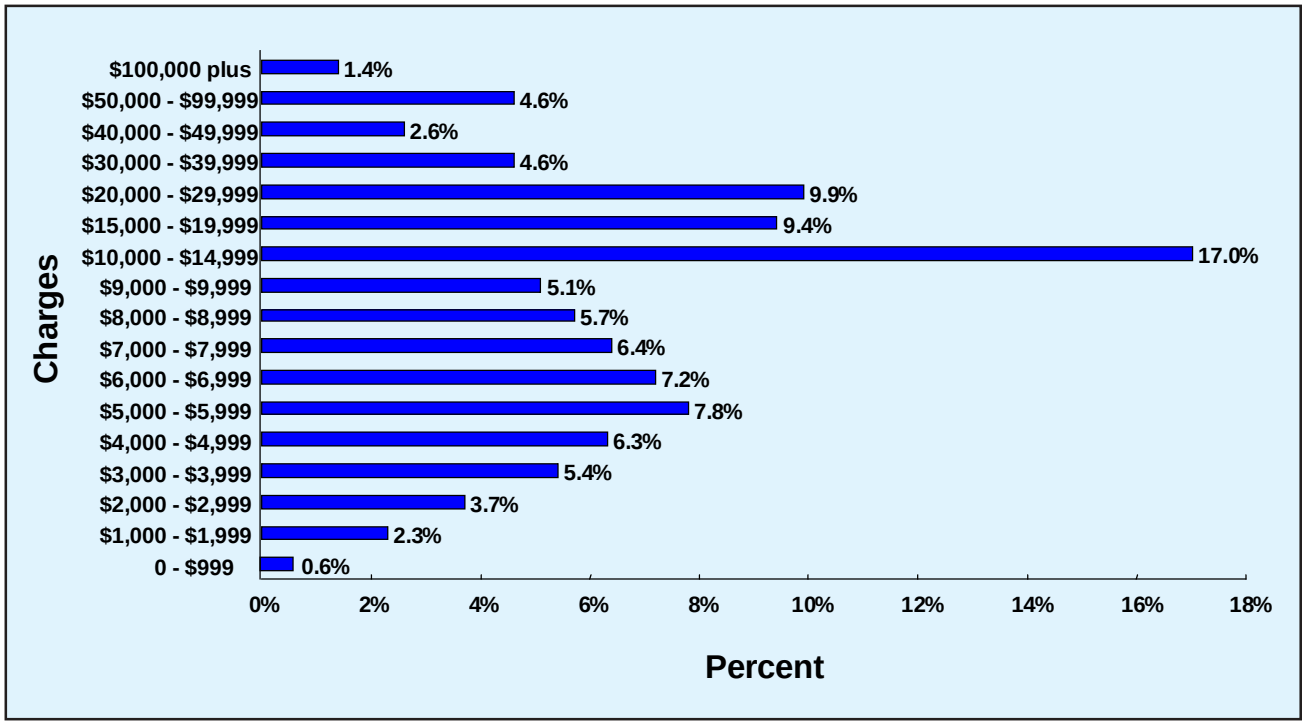

Figure 11. Percent Distribution of Hospital Discharges Grouped by Charge Category, Rhode Island, 2003.

OBSTETRICAL UTILZATION

- **Vaginal deliveries are more common and use fewer days of care than cesarean deliveries.**
  - The total cesarean delivery rate is 27.6%. [Table 18]
  - The average length of stay for a vaginal delivery is 2.4 days compared to 4.7 days for cesareans. [Table 19]

- **The frequency of delivery type varies by hospital. [Table 18]**
  - The all-hospital primary cesarean delivery rate is 19.8%; by hospital, it ranges from 11.1% to 21.9%. [Figure 12]
  - The percent of vaginal deliveries after previous cesarean ranges from 0% to 21.1%. [Figure 13]

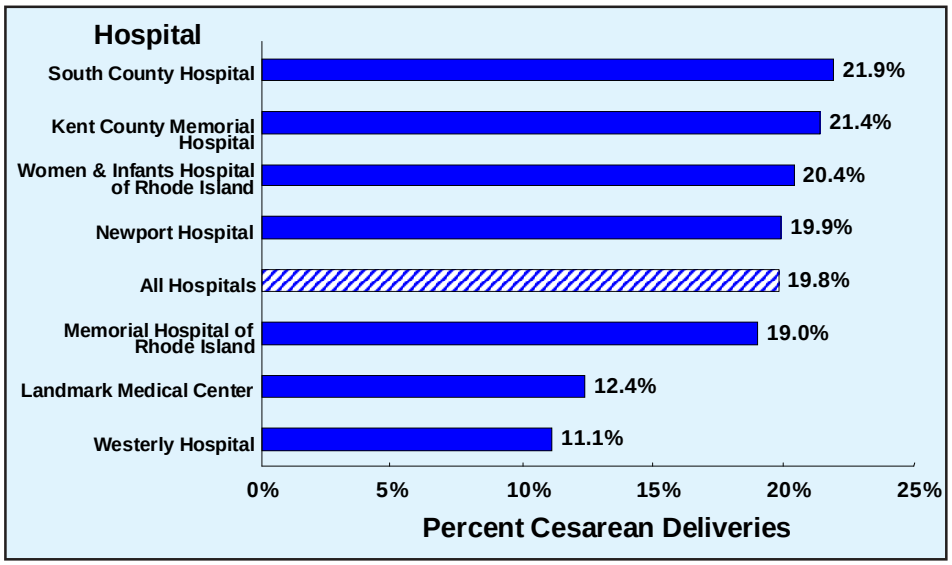

Figure 12. Primary Cesarean Delivery Rate by Hospital, Rhode Island, 2003.

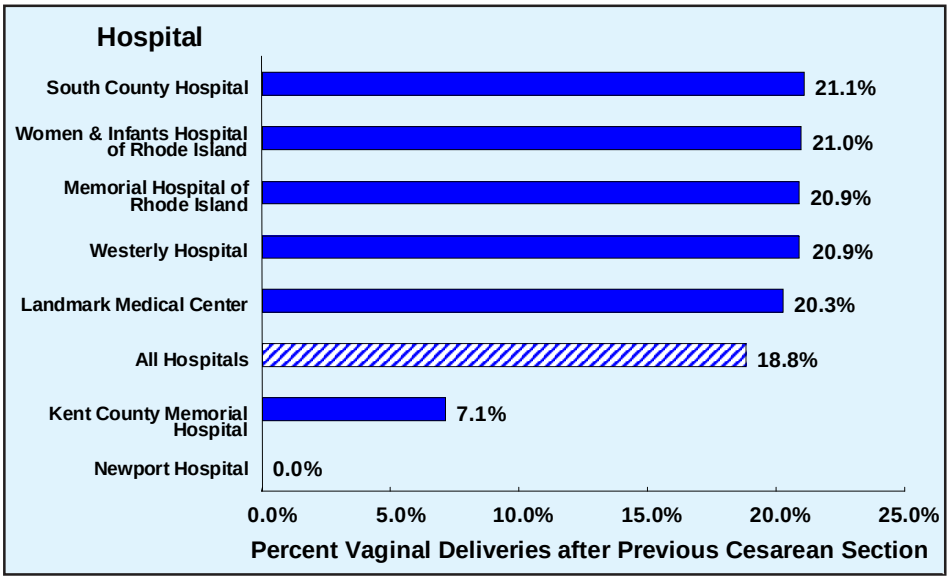

Figure 13. Vaginal Delivery Rate After Previous Cesarean Section by Hospital, Rhode Island, 2003.

DISCHARGES BY EXTERNAL CAUSE OF INJURY ("Ecode")

- **The most common external causes of injury vary by age group.**
  - Falls account for the majority of all injuries (50.9%) and are the most common cause of injury for those under age 15 and over age 44. [Table 20 and Figure 14]
  - Motor vehicle crashes are the most common cause of injury for those age 15-44 years. [Figure 14]

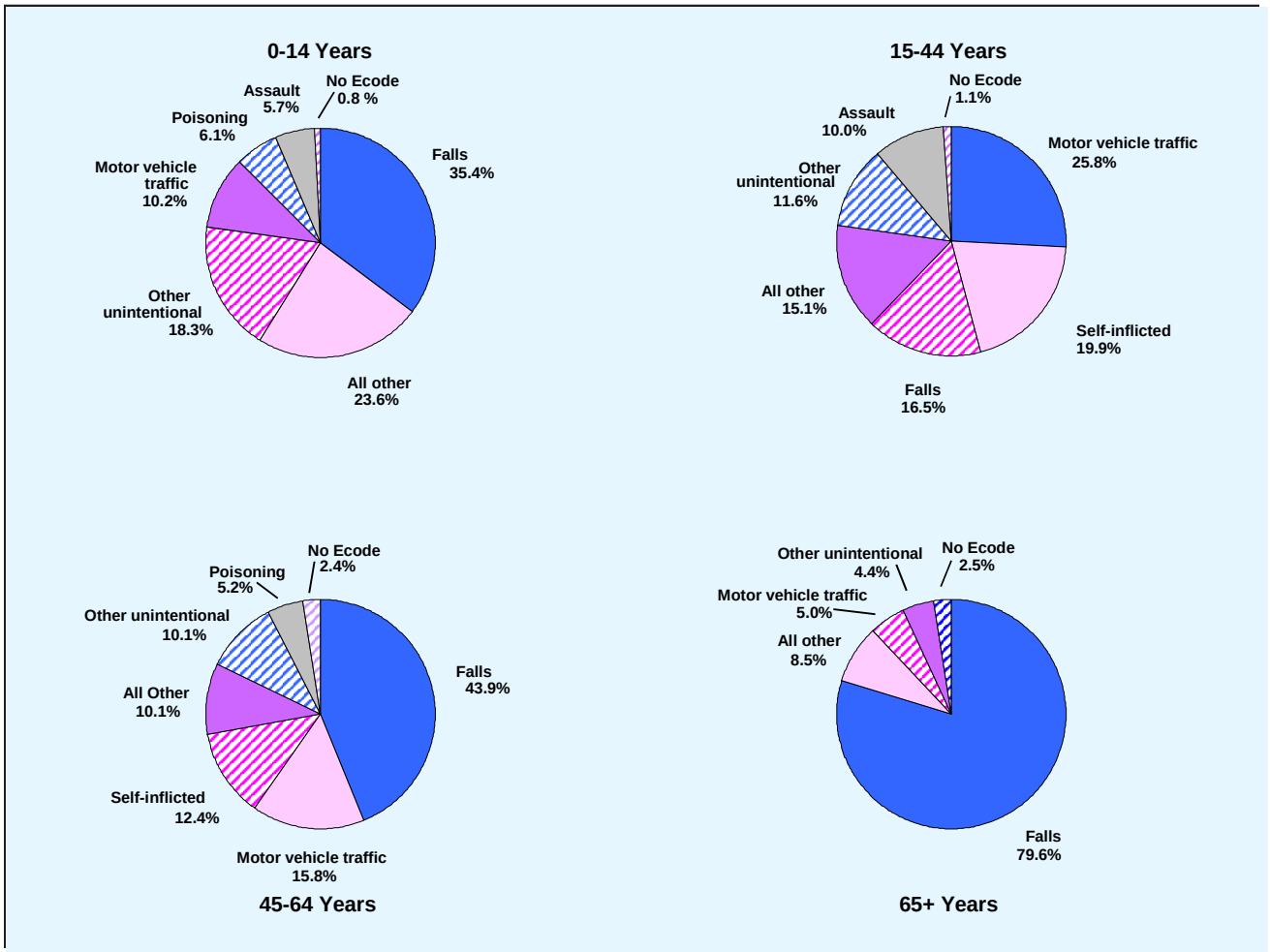

Figure 14. Discharges by External Cause of Injury by Age Group, Rhode Island, 2003.

DEFINITION OF TERMS

Familiarity with the definitions used in the report is important for interpreting the data and for making comparisons with statistical data on short-stay hospital use that are available from other sources. Definitions of the terms and groupings used in this report are described below and in Appendices 1, 2, 3, 4 and 5. The following terms are described in the order as they appear in the text.

Hospital discharge data have been reported as a requirement for hospital licensure since October 1, 1989. Three specialty hospitals (two psychiatric hospitals and one rehabilitation hospital) began reporting October 1, 1998. The data were collected by means of a statewide reporting system that was established as of October 1, 1989 by regulations promulgated by the Rhode Island Department of Health under its licensure authority (Rhode Island General Laws 23-17-10). *(Current licensure regulations for hospitalizations, including detailed data reporting specifications, are available on the website of the Rhode Island Secretary of State (www.rules.state.ri.us/rules/released/pdf/DOH/DOH_2372.pdf) or upon request to the Division of Health Services Regulation, Rhode Island Department of Health, 3 Capitol Hill, Providence, RI 02908 Telephone: 401-277-6015).*

Tertiary services include: cardiac catheterization, positron emission tomography, linear accelerators, open heart surgery, organ transplantation, and neonatal intensive care services, per *Rules and Regulations for Determination of Need for New Health Care Equipment and New Institutional Health Services (R23-15-CON, State of Rhode Island and Providence Plantations, Department of Health, June 1979, amended January 2002*. (See Reference 5)

Beds exclude bassinets.

Patient days and average length of stay (ALOS) are computed after adjusting patients admitted and discharged on the same day to a stay of one day.

Discharge data of newborn infants are excluded from this report, consistent with the national reports.

Rates of discharge and utilization are adjusted for patient state of resident and are calculated using discharges of Rhode Island residents from Rhode Island and Massachusetts hospitals. Please note that only rates are adjusted for patient state of residence. Data other than rates reflect utilization of Rhode Island hospitals and thus, are not adjusted for patient state of residence. The addition of data for Rhode Island residents from Massachusetts hospital discharge data allows for more accurate population-based rates. Although rates are not calculated using 100% resident data, a patient state of residence analysis conducted by the Healthcare Cost and Utilization Project indicates that discharges from Rhode Island and Massachusetts hospitals represent 99.0% of Rhode Island residents discharged in the 35 states included in the analysis in 2002. (See Reference 9) Given this, the rates presented here are close approximations of true resident rates. Previous annual reports (2000, 2001, 2002) on Utilization of Rhode Island Hospitals presented rates not adjusted for patient state of residence. For the purpose of trend analysis, Appendix 7 of this report presents discharge rates by first-listed diagnosis for 2000, 2001 and 2002 adjusted for patient state of residence.

Medical data including diagnoses and procedures were coded according to the *International Classification of Diseases, 9th Revision, Clinical Modification*, (ICD-9-CM). (See Reference 2). As of 1999, the first eleven listed diagnoses and the first ten listed procedures on the hospital medical record are reported for each discharge. The conditions diagnosed and procedures performed are presented by major

diagnostic and procedure groups of the ICD-9-CM. Within these diagnostic and procedure groups, specific categories were selected for presentation corresponding to the categories presented by the National Center for Health Statistics. (See Reference 1)

Diagnosis codes (first-listed) have been grouped into 18 major categories and 40 specific categories corresponding to the categories presented by the National Center for Health Statistics. (See Reference 1) The specific categories are all sub-classifications of the major diagnostic categories, but do not necessarily represent complete breakdowns of the major categories. (See Appendix 1, Reference 1)

Procedures are grouped into 16 major procedure groups and 39 specific categories corresponding to the categories presented by the National Center for Health Statistics. (See Reference 1) The specific categories are all sub-classifications of the major groups, but do not represent a complete sub-division of the major groups in all cases. Up to ten procedures may be reported per discharge. As all reported procedures for a particular discharge are included, the information presented is described as "all-listed procedures." Procedures are counted multiple times if they are listed on a record multiple times. Comparison of the procedure rates for Rhode Island and the United States was not possible, as the data are not collected comparably. Rhode Island collects up to 10 procedures per discharge, while the United States only collects up to 4 procedures per discharge. (See Appendix 2, Reference 1)

Volume-outcome relationship for seven surgical procedures:
For some surgical procedures, research studies have determined that patients have generally better outcomes where hospitals and/or surgeons perform the procedure regularly. (See References 6 and 7) Based on this research, the federal Agency for Healthcare Research and Quality (AHRQ) and the Leapfrog Group have developed groups of indicators based on hospital surgical volumes for specific procedures, which can be used as screening tools to identify potential quality of care issues. (See References 7 and 8) For these procedures, it is said that a "volume-outcome relationship" has been established. *It should be noted that this is a statistical relationship typically based on data from many dozens and sometimes hundreds of hospitals, and exceptions to the general relationship may be expected. Some low-volume hospitals may have excellent outcomes, and vice-versa. Because of these exceptions, surgical volume alone should not be used as an indicator of the quality of care provided by a specific hospital. Data on hospital surgical volumes should preferably be used in combination with case-mix adjusted measures of surgical outcomes, e.g., in-hospital mortality and/or complication rates, and surgeon-specific volume measures, where such measures are available.*

As such, AHRQ has included the performance frequencies of the seven procedures as measures in their set of Inpatient Quality Indicators (IQIs), one of three sets of indicators of the quality of care provided by hospitals and other health care providers. AHRQ cites facility volume threshold levels for this volume-outcome relationship for each of the seven procedures, above which treatment outcomes are generally better than at lower frequencies, based on findings in the literature. Some procedures have upper and lower volume threshold levels, reflecting a range of minimum volume thresholds in the research literature. (See Reference 7) In these cases, the lower volume threshold was used for comparison in this report. More information on AHRQ's quality indicators may be obtained at http://www.qualityindicators.ahrq.gov/. (See Appendix 3)

Data on deliveries is presented using two different tabulation methods in this report and thus, caution must be used when interpreting this data. The Discharges by Diagnosis Group section of this report counts deliveries as the number of discharges with a principal diagnosis code corresponding to a delivery. (See Appendix 1) The Obstetrical Utilization section of this report counts deliveries as the number of discharges with any diagnosis code corresponding to a delivery. (See Appendix 4)

The average charges per discharge are not adjusted for the different complexity of the hospitals' case-mix. Actual reimbursement to the hospitals per discharge will generally be lower than average charges, depending on the specific arrangements under which payers reimburse hospitals. Data for 2003 on actual payments to the hospitals are not available in the discharge data, but may be found in reports on aggregate hospital financial performance, *Hospital Financial Dataset 2003,* available at http://www.health.ri.gov/chic/performance/hospitaldataset2003.xls

Injuries are defined as discharges with a principal diagnosis code 800-904, 910-994, 995.5 and 995.81 Discharges with a principal diagnosis of 905-909 corresponding to late effects of injuries, poisonings, toxic effects, and other external causes are not included as injuries in this report. However, the external cause of injury (Ecode) for discharges with a principal diagnosis of injury, as defined previously, may be categorized as a late effect in this report.

Ecode is a reference to an external cause of injury code in the ICD-9-CM coding system.

LIST OF DATA TABLES FOR FIGURES 1 – 14

Table 1. Characteristics of Rhode Island hospitals, 2003[1]

Hospital	Type of Hospital				Services						
	General Med/Surg	Obstetrics & Gynecology	Psychiatric	Rehabilitation	Obstetrics & Gynecology	Pediatrics	Psychiatric	Rehabilitation	Emergency Room	Teaching Hospital	Tertiary Status
Care New England Network Affiliation:											
Butler Hospital			X				X			X	
Kent County Memorial Hospital	X				X	X	X	X	X		X
Women & Infants Hospital of Rhode Island		X			X					X	X
Landmark Health Systems Affiliation:											
Landmark Medical Center	X				X		X	X	X		
Rehabilitation Hospital of Rhode Island *(for-profit)*				X				X			
Lifespan Network Affiliation:											
Emma Pendleton Bradley Hospital			Pediatric				X			X	
Miriam Hospital	X								X	X	X
Newport Hospital	X				X	X	X	X	X		
Rhode Island Hospital	X					X			X	X	X
Memorial Hospital of Rhode Island	X				X	X		X	X	X	X
Roger Williams Medical Center	X						X		X	X	X
St. Joseph Health Services of Rhode Island *(church)*	X						X	X	X		
South County Hospital	X				X	X			X		
Westerly Hospital	X				X	X			X		

[1]*For information on the references for Table 1, see References 3 and 4.*

Table 2. Licensed and staffed beds and occupancy rates, Rhode Island, 2003[1]

Hospital	Licensed Beds[2]	Staffed Beds[2]	Licensed Occupancy	Staffed Occupancy
All Hospitals	3,169	2,439	59.6%	77.4%
Emma Pendleton Bradley Hospital	60	60	91.0%	91.0%
Butler Hospital	105	105	93.8%	93.8%
Kent County Memorial Hospital	359	338	62.9%	66.8%
Landmark Medical Center	233	131	41.8%	74.4%
Memorial Hospital of Rhode Island	294	159	35.6%	65.8%
Miriam Hospital	247	193	71.8%	91.9%
Newport Hospital	129	123	59.2%	62.0%
Rehabilitation Hospital of Rhode Island	82	43	49.4%	94.2%
Rhode Island Hospital	719	562	63.2%	80.9%
Roger Williams Medical Center	220	156	48.6%	68.6%
St. Joseph Health Services of Rhode Island	359	275	59.5%	77.7%
South County Hospital	100	86	58.3%	67.8%
Westerly Hospital	125	71	38.9%	68.4%
Women & Infants Hospital of Rhode Island	137	137	97.3%	97.3%

[1]Source:Center for Health Data and Analysis, Rhode Island Department of Health (See Reference 4).
[2]Beds exclude bassinets.

Table 3. Hospital utilization, Rhode Island, 2003

Discharges of newborn infants are excluded.

Hospital	Discharges	Patient Days[1]	Average Length of Stay[1]	Average Charge per Discharge
All Hospitals	126,784	689,249	5.4	$17,576
Emma Pendleton Bradley Hospital	925	19,105	20.7	$18,671
Butler Hospital	4,147	35,954	8.7	$11,388
Kent County Memorial Hospital	14,561	82,401	5.7	$15,717
Landmark Medical Center	7,150	35,584	5.0	$11,626
Memorial Hospital of Rhode Island	7,765	38,191	4.9	$15,380
Miriam Hospital	12,797	64,761	5.1	$26,127
Newport Hospital	6,045	27,851	4.6	$10,193
Rehabilitation Hospital of Rhode Island	918	14,777	16.1	$25,774
Rhode Island Hospital	30,004	165,968	5.5	$26,345
Roger Williams Medical Center	7,890	39,034	4.9	$11,540
St. Joseph Health Services of Rhode Island	11,016	77,954	7.1	$17,659
South County Hospital	5,357	21,292	4.0	$8,944
Westerly Hospital	4,629	17,726	3.8	$11,055
Women & Infants Hospital of Rhode Island	13,580	48,651	3.6	$10,143

[1]Patient days and average length of stay are computed after adjusting patients admitted and discharged on the same day to a stay of one day.

Table 4. Hospital utilization by age group and gender, Rhode Island, 2003

Discharges of newborn infants are excluded.

Age Group	Discharges	Patient Days[1]	Average Length of Stay[1]
Under 15 Years: All[2]……	**7,675**	**46,107**	**6.0**
Female……	3,419	19,723	5.8
Male……	4,255	26,372	6.2
15-44 Years: All[2]…….	**38,267**	**169,665**	**4.4**
Female……	27,503	109,454	4.0
Male……	10,764	60,211	5.6
45-64 Years: All……	**28,742**	**157,592**	**5.5**
Female……	14,385	77,063	5.4
Male……	14,357	79,529	5.5
65 Years and Older: All...	**52,094**	**315,837**	**6.1**
Female……	30,461	182,636	6.0
Male……	21,633	133,201	6.2
Age not reported……...	**6**	**48**	**8.0**
All Ages……..	**126,784**	**689,249**	**5.4**
Female……	75,770	389,878	5.1
Male……	51,012	299,329	5.9
Gender not reported……	2	42	21.0

[1]Patient days and average length of stay are computed after adjusting patients admitted and discharged on the same day to a stay of one day.

[2]One case, age 0-14 years, with gender not reported is included. This case used a total of 12 days.

Table 5. Hospital utilization rate per 1,000 population[1] by age group and gender, Rhode Island, 2003

Discharges of newborn infants are excluded.

Age Group	Discharge Rate[2]	Utilization Rate (Days)[2]
Under 15 Years: All…	**35.2**	**215.0**
Female……	32.2	185.5
Male……..	38.0	243.1
15-44 Years: All[3]……	**79.5**	**350.2**
Female……..	108.8	446.8
Male……..	45.3	251.5
45-64 Years: All……..	**108.4**	**597.2**
Female……..	104.1	567.1
Male……..	112.9	629.4
65 Years and Older….	**338.9**	**2,069.8**
Female……..	328.7	1,988.7
Male……..	354.4	2,192.8
All Ages[4]……..	**114.5**	**625.4**
Female……..	131.7	680.5
Male……..	96.0	566.1

[1]Census populations for Rhode Island as of July 1, 2003 were provided by the Bureau of the Census, United States Department of Commerce. (See Appendix 6)

[2]Rates are adjusted for patient's state of residence and include discharges of Rhode Island residents from Rhode Island and Massachusetts hospitals. This represents a change from previous reports. For more information, see Rates in the Definition of Terms section of this report.

[3]Two cases where gender is not reported are included.

[4]Twenty-eight cases where age is not reported are included.

Table 6. Number of discharges by gender and first-listed diagnosis, Rhode Island, 2003

Discharges of newborn infants are excluded.

First-Listed Diagnosis[1]	Total	Female	Male
All conditions[2]	126,784	75,770	51,012
Infectious and parasitic diseases	2,824	1,528	1,296
Septicemia	1,081	588	493
Neoplasms	6,870	4,211	2,659
Malignant neoplasms	5,231	2,844	2,387
Malignant neoplasm of large intestine and rectum	630	314	316
Malignant neoplasm of trachea, bronchus, and lung	651	314	337
Benign neoplasms	1,494	1,288	206
Benign neoplasms of uterus	809	809	0
Endocrine, nutritional, and metabolic diseases, and immunity disorders	4,626	2,670	1,956
Diabetes mellitus	1,622	725	897
Volume depletion	1,665	1,007	658
Diseases of the blood and blood-forming organs	1,429	796	633
Anemias	931	533	398
Mental disorders	12,378	6,379	5,999
Psychoses	9,585	5,081	4,504
Schizophrenic disorders	1,112	520	592
Depressive disorder	3,150	2,061	1,089
Diseases of the nervous system and sense organs	1,792	1,013	779
Diseases of the circulatory system	21,274	10,449	10,825
Essential hypertension	224	137	87
Heart disease	15,579	7,500	8,079
Acute myocardial infarction	3,316	1,396	1,920
Coronary atherosclerosis	3,691	1,397	2,294
Other ischemic heart disease	282	149	133
Cardiac dysrhythmias	2,266	1,203	1,063
Congestive heart failure	3,870	2,177	1,693
Cerebrovascular disease	3,264	1,767	1,497
Diseases of the respiratory system	12,875	6,929	5,946
Acute bronchitis and bronchiolitis	709	346	363
Pneumonia	4,793	2,555	2,238
Chronic bronchitis	2,489	1,446	1,043
Asthma	1,579	979	600
Diseases of the digestive system	11,636	6,381	5,255
Appendicitis	982	462	520
Noninfectious enteritis and colitis	1,097	725	372
Intestinal obstruction	1,027	592	435
Diverticula of intestine	1,309	736	573
Cholelithiasis	1,083	721	362
Acute pancreatitis	894	417	477
Diseases of the genitourinary system	6,565	4,242	2,323
Calculus of kidney and ureter	726	317	409
Urinary tract infection	1,385	923	462
Complications of pregnancy, childbirth, and the puerperium	14,963	14,963	0
Females with deliveries	13,451	13,451	0
Diseases of the skin and subcutaneous tissue	2,269	1,144	1,125
Cellulitis and abscess	1,901	926	975
Diseases of the musculoskeletal system and connective tissue	6,811	3,900	2,911
Osteoarthrosis and allied disorders	2,451	1,554	897
Intervertebral disc disorders	1,510	727	783
Congenital anomalies	458	218	240
Certain conditions originating in the perinatal period[3]	457	206	250
Symptoms, signs, and ill-defined conditions	7,283	4,124	3,159
Injury and poisoning	9,621	5,078	4,543
Fractures, all sites	3,696	2,247	1,449
Fracture of neck of femur	1,333	1,003	330
Poisonings	752	416	336
Certain complications of surgical and medical care	3,369	1,694	1,675
Supplementary classifications	2,451	1,395	1,056

[1]Diagnosis groups are defined in Appendix 1.

[2]Of the 126,784 discharges, there are 202 cases missing a first-listed diagnosis, of which 2 cases are also missing gender. When these cases are excluded, the All Conditions total is 126,582.

[3]One case with a first-listed diagnosis of certain conditions originating in the perinatal period, with unknown gender, is included in the total.

Table 7. Leading reasons for hospital admission by gender and first-listed diagnosis, Rhode Island, 2003

Discharges of newborn infants are excluded.

First-Listed Diagnosis[1]	All Patients
Heart disease……	15,579
Deliveries……	13,451
Psychoses……	9,585
Malignant neoplasms……	5,231
Pneumonia……	4,793

First-Listed Diagnosis[1]	Female
Deliveries…….	13,451
Heart disease…….....	7,500
Psychoses…….	5,081
Malignant neoplasms……...	2,844
Pneumonia……...	2,555

First-Listed Diagnosis[1]	Male
Heart disease…….	8,079
Psychoses…….	4,504
Malignant neoplasms……...	2,387
Pneumonia……...	2,238
Cerebrovascular disease……...	1,497

[1]Diagnosis groups are defined in Appendix 1.

Table 8. Hospital discharge rate per 10,000 population[1] by first-listed diagnosis, Rhode Island and the United States, 2003

Discharges of newborn infants are excluded.

First-Listed Diagnosis[2]	RI Rate[3]	US Rate[4]
All conditions[5]	1,144.9	1,199.7
Infectious and parasitic diseases	25.5	32.0
Septicemia	9.8	12.6
Neoplasms	62.3	58.4
Malignant neoplasms	47.7	43.8
Malignant neoplasm of large intestine and rectum	5.7	5.5
Malignant neoplasm of trachea, bronchus, and lung	6.3	5.8
Benign neoplasms	13.2	13.3
Benign neoplasms of uterus	7.3	7.9
Endocrine, nutritional, and metabolic diseases, and immunity disorders	42.3	61.6
Diabetes mellitus	14.6	20.6
Volume depletion	15.0	19.6
Diseases of the blood and blood-forming organs	12.9	15.4
Anemias	8.4	10.7
Mental disorders	109.9	79.2
Psychoses	85.0	54.8
Schizophrenic disorders	10.0	11.0
Depressive disorder	27.9	17.5
Diseases of the nervous system and sense organs	16.2	18.4
Diseases of the circulatory system	194.0	222.2
Essential hypertension	2.0	10.6
Heart disease	141.9	153.5
Acute myocardial infarction	29.6	26.5
Coronary atherosclerosis	33.4	35.8
Other ischemic heart disease	2.7	7.2
Cardiac dysrhythmias	21.0	27.6
Congestive heart failure	35.5	35.8
Cerebrovascular disease	29.3	33.3
Diseases of the respiratory system	116.6	131.3
Acute bronchitis and bronchiolitis	6.2	8.3
Pneumonia	43.7	48.1
Chronic bronchitis	22.7	18.2
Asthma	14.1	19.8
Diseases of the digestive system	106.1	119.8
Appendicitis	8.7	10.6
Noninfectious enteritis and colitis	10.0	10.8
Intestinal obstruction	8.9	10.0
Diverticula of intestine	11.9	10.3
Cholelithiasis	9.8	12.4
Acute pancreatitis	8.2	7.7
Diseases of the genitourinary system	59.3	65.2
Calculus of kidney and ureter	6.5	6.3
Urinary tract infection	12.6	14.9
Complications of pregnancy, childbirth, and the puerperium[6]	132.6	157.3
Females with deliveries	119.5	138.9
Diseases of the skin and subcutaneous tissue	20.8	22.7
Cellulitis and abscess	17.2	16.4
Diseases of the musculoskeletal system and connective tissue	62.4	64.0
Osteoarthrosis and allied disorders	22.4	21.5
Intervertebral disc disorders	13.4	12.3
Congenital anomalies	5.4	6.3
Certain conditions originating in the perinatal period	3.5	6.6
Symptoms, signs, and ill-defined conditions	66.5	9.4
Injury and poisoning	84.6	97.8
Fractures, all sites	31.7	36.3
Fracture of neck of femur	12.2	10.5
Poisonings	6.7	8.4
Certain complications of surgical and medical care	31.3	30.2
Supplementary classifications[6]	22.4	31.3

[1]Population estimates for Rhode Island were provided by the Bureau of the Census, United States Department of Commerce. (See Appendix 6)

[2]Diagnosis groups are defined in Appendix 1.

[3]Rates are adjusted for patient's state of residence and include discharges of Rhode Island residents from Rhode Island and Massachusetts hospitals. This represents a change from previous reports. For more information, see Rates in the Definition of Terms section of this report and Appendix 7.

[4]Source for the United States rates: See Reference 1.

[5]There were 192 cases missing a primary diagnosis. When these cases are excluded, the discharge rate for RI residents is 1,143.1 per 10,000 population.

[6]US rate calculated by the Rhode Island Department of Health using data in the US report.

Table 9. Average length of stay[1] by gender and first-listed diagnosis, Rhode Island, 2003

Discharges of newborn infants are excluded.

First-Listed Diagnosis[2]	Total	Female	Male
All conditions[3]	5.4	5.1	5.9
Infectious and parasitic diseases	6.6	6.5	6.8
Septicemia	9.3	9.0	9.7
Neoplasms	7.1	6.4	8.2
Malignant neoplasms	8.1	7.8	8.5
Malignant neoplasm of large intestine and rectum	9.9	9.9	10.0
Malignant neoplasm of trachea, bronchus, and lung	8.8	8.9	8.6
Benign neoplasms	3.7	3.4	8.2
Benign neoplasms of uterus	2.9	2.9	NA
Endocrine, nutritional, and metabolic diseases, and immunity disorders	4.6	4.5	4.9
Diabetes mellitus	5.8	5.4	6.1
Volume depletion	3.5	3.7	3.3
Diseases of the blood and blood-forming organs	5.1	5.0	5.2
Anemias	5.0	5.0	5.0
Mental disorders	8.7	8.7	8.7
Psychoses	8.7	8.7	8.8
Schizophrenic disorders	13.0	14.8	11.5
Depressive disorder	8.3	8.0	8.7
Diseases of the nervous system and sense organs	6.5	6.3	6.8
Diseases of the circulatory system	5.2	5.3	5.1
Essential hypertension	2.8	2.7	3.0
Heart disease	4.9	5.0	4.8
Acute myocardial infarction	5.3	5.4	5.2
Coronary atherosclerosis	3.4	3.5	3.7
Other ischemic heart disease	2.5	2.6	2.4
Cardiac dysrhythmias	3.9	4.2	3.7
Congestive heart failure	5.5	5.5	5.5
Cerebrovascular disease	6.7	6.0	5.6
Diseases of the respiratory system	5.9	5.8	6.0
Acute bronchitis and bronchiolitis	3.2	3.2	3.2
Pneumonia	5.8	5.7	5.9
Chronic bronchitis	5.0	4.9	5.2
Asthma	3.3	3.7	2.8
Diseases of the digestive system	5.4	5.5	5.2
Appendicitis	3.7	3.9	3.4
Noninfectious enteritis and colitis	5.7	6.0	5.2
Intestinal obstruction	6.8	6.9	6.5
Diverticula of intestine	5.8	6.0	5.5
Cholelithiasis	4.5	4.3	4.9
Acute pancreatitis	6.1	5.6	6.5
Diseases of the genitourinary system	4.1	4.0	4.5
Calculus of kidney and ureter	2.9	2.8	2.9
Urinary tract infection	4.5	4.3	4.7
Complications of pregnancy, childbirth, and the puerperium	3.1	3.1	NA
Females with deliveries	3.0	3.0	NA
Diseases of the skin and subcutaneous tissue	5.0	5.3	4.8
Cellulitis and abscess	4.8	5.1	4.4
Diseases of the musculoskeletal system and connective tissue	4.1	4.2	3.9
Osteoarthrosis and allied disorders	4.6	4.6	4.5
Intervertebral disc disorders	2.2	2.4	2.0
Congenital anomalies	4.8	4.9	4.8
Certain conditions originating in the perinatal period[4]	9.9	10.8	9.1
Symptoms, signs, and ill-defined conditions	2.9	2.9	2.9
Injury and poisoning	6.2	5.8	6.6
Fractures, all sites	6.2	5.9	6.8
Fracture of neck of femur	6.6	6.4	7.3
Poisonings	3.4	3.2	3.5
Certain complications of surgical and medical care	6.4	6.4	6.4
Supplementary classifications	9.5	9.1	10.0

[1]Average length of stay is computed after adjusting patients admitted and discharged on the same day to a stay of one day.
[2]Diagnosis groups are defined in Appendix 1.
[3]There are 202 cases without a first-listed diagnosis, ALOS of 6.3 days, included in the total. Of these, there are 2 cases with unknown gender, ALOS of 21.0 days, included in the total..
[4]One case with a first-listed diagnosis of certain conditions originating in the perinatal period with unknown gender is included in the total.

Table 10. Average length of stay[1] by first-listed diagnosis, Rhode Island and the United States, 2003

Discharges of newborn infants are excluded.

First-Listed Diagnosis[2]	Total RI	Total US[3]
All conditions[4]	5.4	4.8
Infectious and parasitic diseases	6.6	6.4
Septicemia	9.3	8.2
Neoplasms	7.1	5.9
Malignant neoplasms	8.1	6.7
Malignant neoplasm of large intestine and rectum	9.9	8.6
Malignant neoplasm of trachea, bronchus, and lung	8.8	6.8
Benign neoplasms	3.7	3.2
Benign neoplasms of uterus	2.9	2.6
Endocrine, nutritional, and metabolic diseases, and immunity disorders	4.6	4.2
Diabetes mellitus	5.8	4.7
Volume depletion	3.5	3.7
Diseases of the blood and blood-forming organs	5.1	4.6
Anemias	5.0	4.4
Mental disorders	8.7	7.2
Psychoses	8.7	8.0
Schizophrenic disorders	13.0	11.5
Depressive disorder	8.3	6.6
Diseases of the nervous system and sense organs	6.5	5.3
Diseases of the circulatory system	5.2	4.7
Essential hypertension	2.8	2.3
Heart disease	4.9	4.6
Acute myocardial infarction	5.3	5.5
Coronary atherosclerosis	3.4	3.5
Other ischemic heart disease	2.5	2.6
Cardiac dysrhythmias	3.9	3.7
Congestive heart failure	5.5	5.2
Cerebrovascular disease	6.7	5.1
Diseases of the respiratory system	5.9	5.1
Acute bronchitis and bronchiolitis	3.2	3.1
Pneumonia	5.8	5.5
Chronic bronchitis	5.0	5.1
Asthma	3.3	3.3
Diseases of the digestive system	5.4	4.7
Appendicitis	3.7	3.3
Noninfectious enteritis and colitis	5.7	4.6
Intestinal obstruction	6.8	6.1
Diverticula of intestine	5.8	5.4
Cholelithiasis	4.5	4.2
Acute pancreatitis	6.1	5.9
Diseases of the genitourinary system	4.1	3.9
Calculus of kidney and ureter	2.9	2.6
Urinary tract infection	4.5	4.8
Complications of pregnancy, childbirth, and the puerperium[5]	3.1	2.7
Females with deliveries	3.0	2.6
Diseases of the skin and subcutaneous tissue	5.0	4.9
Cellulitis and abscess	4.8	4.7
Diseases of the musculoskeletal system and connective tissue	4.1	4.0
Osteoarthrosis and allied disorders	4.6	4.0
Intervertebral disc disorders	2.2	2.9
Congenital anomalies	4.8	6.4
Certain conditions originating in the perinatal period	9.9	10.5
Symptoms, signs, and ill-defined conditions	2.9	3.1
Injury and poisoning	6.2	5.2
Fractures, all sites	6.2	5.4
Fracture of neck of femur	6.6	6.5
Poisonings	3.4	2.8
Certain complications of surgical and medical care	6.4	6.2
Supplementary classifications[5]	9.5	8.0

[1]Average length of stay is computed after adjusting patients admitted and discharged on the same day to a stay of one day.
[2]Diagnosis groups are defined in Appendix 1.
[3]Source for the United States rates: See Reference 1.
[4]Two hundred and two (202) cases without a first-listed diagnosis, ALOS of 6.3 days, are included in the total.
[5]US length of stay calculated by the Rhode Island Department of Health using data in US report.

Table 11. Number of all-listed procedures for discharges from hospitals, by gender and procedure category, Rhode Island, 2003

Discharges of newborn infants are excluded.

Procedures[1]	Total	Female	Male
All procedures[2,3]	180,749	103,090	77,657
Operations on the nervous system	4,331	2,097	2,234
Spinal tap	1,392	714	678
Operations on the endocrine system	210	144	66
Operations on the eye	199	100	99
Operations on the ear	108	40	68
Operations on the nose, mouth, and pharynx	757	342	415
Operations on the respiratory system	5,474	2,511	2,963
Bronchoscopy with or without biopsy	1,552	671	881
Operations on the cardiovascular system	28,387	11,531	16,856
Balloon angioplasty of coronary artery or coronary atherectomy	2,694	884	1,810
Insertion of coronary artery stent(s)	2,561	848	1,713
Coronary artery bypass graft	2,012	573	1,439
Cardiac catheterization	4,919	1,883	3,036
Insertion, replacement, removal, and revision of pacemaker leads or device	1,430	691	739
Hemodialysis	2,341	1,004	1,337
Operations on the hemic and lymphatic system	1,562	809	753
Operations on the digestive system	25,931	14,854	11,077
Endoscopy of small intestine with or without biopsy	4,724	2,590	2,134
Endoscopy of large intestine with or without biopsy	2,761	1,655	1,106
Partial excision of large intestine	1,329	740	589
Appendectomy, excluding incidental	1,106	557	549
Cholecystectomy	1,572	1,022	550
Lysis of peritoneal adhesions	1,402	1,069	333
Operations on the urinary system	4,953	2,671	2,282
Cystoscopy with or without biopsy	989	676	313
Operations in the male genital organs	969	0	969
Prostatectomy	707	0	707
Operations on the female genital organs	6,646	6,646	0
Oophorectomy and salpingo-oophorectomy	1,553	1,553	0
Bilateral destruction or occlusion of fallopian tubes	969	969	0
Hysterectomy	1,994	1,994	0
Obstetrical procedures	20,395	20,395	0
Episiotomy with or without forceps or vacuum extraction	1,569	1,569	0
Artificial rupture of membranes	1,166	1,166	0
Medical induction of labor	1,857	1,857	0
Cesarean section	3,728	3,728	0
Repair of current obstetric laceration	5,755	5,755	0
Operations on the musculoskeletal system	13,468	7,015	6,453
Partial excision of bone	575	252	323
Reduction of fracture	2,399	1,403	996
Open reduction of fracture with internal fixation	1,809	1,092	717
Excision or destruction of intervertebral disc	1,487	703	784
Total hip replacement	824	492	332
Total knee replacement	1,370	899	471
Operations on the integumentary system	5,553	2,947	2,606
Debridement of wound, infection, or burn	1,612	728	884
Miscellaneous diagnostic and therapeutic procedures and new technologies[4]	62,004	31,066	30,936
Computerized axial tomography	1,474	773	701
Arteriography and angiocardiography using contrast material	11,678	4,637	7,041
Diagnostic ultrasound	4,895	2,644	2,251
Physical therapy procedures	512	315	197
Respiratory therapy[5]	4,652	2,240	2,411
Insertion of endotracheal tube	2,769	1,300	1,469
Transfusion of blood and blood components	12,321	6,922	5,399
Injection or infusion of cancer chemotherapeutic substance	959	488	471

[1]Procedure categories are defined in Appendix 2.
[2]Up to 10 procedures may be listed per discharge
[3]There are 2 procedures for which patient gender is unknown included in the total.
[4]There are 2 procedures for which patient gender is unknown included in the total.
[5]There is 1 procedure for which patient gender is unknow included in the total.

Table 12. Most common procedures by gender and procedure category, Rhode Island, 2003

Discharges of newborn infants are excluded.

Procedures[1]	All Patients
Transfusion of blood and blood components……	12,321
Arteriography and angiocardiography using contrast material….	11,678
Repair of current obstetric laceration……	5,755
Cardiac catheterization……..	4,919
Diagnostic ultrasound……	4,895

Procedures[1]	Female
Transfusion of blood and blood components……	6,922
Repair of current obstetric laceration……	5,755
Arteriography and angiocardiography using contrast material….	4,637
Cesarean section……	3,728
Diagnostic ultrasound……	2,644

Procedures[1]	Male
Arteriography and angiocardiography using contrast material….	7,041
Transfusion of blood and blood components……	5,399
Cardiac catheterization……..	3,036
Respiratory Therapy……..	2,411
Diagnostic ultrasound……	2,251

[1]Procedure categories are defined in Appendix 2.

Table 13. Number of adult cardiac procedures[1] by hospital, Rhode Island, 2000-2003

Hospital	Coronary Artery Bypass Graft[2, 3]					Percutaneous Transluminal Coronary Angioplasty[4, 5]				
	2000	2001	2002	2003	2000-2003 Average	2000	2001	2002	2003	2000-2003 Average
Miriam Hospital……..	607	565	548	573	573.3	1,290	1,308	1,501	1,583	1,420.5
Rhode Island Hospital……	563	571	603	502	559.8	860	1,010	952	998	955.0
All Hospitals……...	1,170	1,136	1,151	1,075	1,133.0	2,150	2,318	2,453	2,581	2,375.5

[1]Procedures are defined in Appendix 3.
[2]Review of literature by AHRQ indicates that above a certain volume threshold, the rate of adverse outcomes decreases. Depending on the study, this threshold is between 100 and 200 procedures per year. (See Reference 7)
[3]Rhode Island regulations require existing coronary artery bypass graft surgical programs to maintain an annual utilization rate of at least 500 patients per year.
[4]Review of literature by AHRQ indicates that above a certain volume threshold, the rate of adverse outcomes decreases. Depending on the study, this threshold is between 200 and 400 procedures per year. (See Reference 7)
[5]Rhode Island regulations require existing coronary angioplasty programs to maintain an annual utilization rate of at least 400 patients per year.

Table 14. Number of pediatric heart surgeries[1] by hospital, Rhode Island, 2000-2003 (Revised February 2006)

Hospital	Pediatric Heart Surgery[2]				
	2000	2001	2002	2003	2000-2003 Average
Rhode Island Hospital……	33	22	20	12	21.8

[1]Pediatric heart surgery is defined in Appendix 3.
[2]Review of literature by AHRQ indicates that above a certain volume threshold, the rate of adverse outcomes decreases. This threshold is 100 procedures per year. (See Reference 7).

Table 15. Number of cancer-related surgical procedures[1] by hospital, Rhode Island, 2000-2003

Hospital	Esophageal Resection[2]					Pancreatic Resection[3]				
	2000	2001	2002	2003	2000-2003 Average	2000	2001	2002	2003	2000-2003 Average
Kent County……...	1	1	-	-	0.5	1	5	1	1	2.0
Landmark Medical Center..	-	1	-	-	0.3	1	-	-	-	0.3
Memorial Hospital……..	-	-	-	2	0.5	4	2	1	-	1.8
Miriam Hospital…….	-	1	-	-	0.3	4	2	2	4	3.0
Newport Hospital……...	-	-	-	1	0.3	-	-	-	2	0.5
Rhode Island Hospital……	-	-	1	8	2.3	16	12	9	13	12.5
Roger Williams……..	-	1	-	1	0.5	6	4	1	2	3.3
St. Joseph Health Services.	-	-	-	-	0.0	1	1	-	1	0.8
Westerly Hospital……...	-	-	-	-	0.0	-	-	-	-	0.0
All Hospitals……...	1	4	1	12	4.5	32	26	14	23	23.8

[1]Procedures are defined in Appendix 3.
[2]Review of literature by AHRQ indicates that above a certain volume threshold, the rate of adverse outcomes decreases. Depending on the study, this threshold is between 6 and 7 procedures per year. (See Reference 7)
[3]Review of literature by AHRQ indicates that above a certain volume threshold, the rate of adverse outcomes decreases. Depending on the study, this threshold is between 10 and 11 procedures per year. (See Reference 7)

Table 16. Number of peripheral vascular system surgical procedures[1] by hospital, Rhode Island, 2000-2003

Hospital	Abdominal Aortic Aneurysm Repair[2]					Carotid Endarterectomy[3]				
	2000	2001	2002	2003	2000-2003 Average	2000	2001	2002	2003	2000-2003 Average
Kent County……..	27	11	6	5	12.3	148	120	102	100	117.5
Landmark Medical Center..	7	15	14	10	11.5	31	33	60	49	43.3
Memorial Hospital……..	17	12	5	3	9.3	34	39	36	31	35.0
Miriam Hospital…….	43	43	36	39	40.3	100	113	128	103	111.0
Newport Hospital……...	3	4	2	3	3.0	31	32	23	14	25.0
Rhode Island Hospital……	52	45	52	50	49.8	186	152	193	157	172.0
Roger Williams……..	10	4	4	3	5.3	21	14	5	4	11.0
South County Hospital…..	3	6	2	3	3.5	17	18	30	24	22.3
St. Joseph Health Services……..	8	7	3	5	5.8	64	38	36	47	46.3
Westerly Hospital……...	7	5	7	2	5.3	22	41	38	18	29.8
All Hospitals……...	177	152	131	123	145.8	654	600	651	547	613.0

[1]Procedures are defined in Appendix 3.
[2]Review of literature by AHRQ indicates that above a certain volume threshold, the rate of adverse outcomes decreases. Depending on the study, this threshold is between 10 and 32 procedures per year. (See Reference 7)
[3]Review of literature indicates that above a certain volume threshold, the rate of adverse outcomes decreases. Depending on the study, this threshold is between 50 and 101 procedures per year. (See Reference 7)

Table 17. Discharges and percent distribution grouped by charge category, Rhode Island, 2003

Discharges of newborn infants are excluded.

Grouped Charges[1]	Discharges	Percent	Cumulative Percent
0 - $999……	716	0.6%	0.6%
$1,000 - $1,999……	2,941	2.3%	2.9%
$2,000 - $2,999……	4,649	3.7%	6.6%
$3,000 - $3,999……	6,856	5.4%	12.0%
$4,000 - $4,999……	7,971	6.3%	18.3%
$5,000 - $5,999……	9,835	7.8%	26.1%
$6,000 - $6,999……	9,167	7.2%	33.3%
$7,000 - $7,999……	8,152	6.4%	39.7%
$8,000 - $8,999……	7,266	5.7%	45.4%
$9,000 - $9,999……	6,413	5.1%	50.5%
$10,000 - $14,999……	21,561	17.0%	67.5%
$15,000 - $19,999……	11,948	9.4%	76.9%
$20,000 - $29,999……	12,540	9.9%	86.8%
$30,000 - $39,999……	5,819	4.6%	91.4%
$40,000 - $49,999……	3,308	2.6%	94.0%
$50,000 - $99,999……	5,813	4.6%	98.6%
$100,000 plus……..	1,829	1.4%	100.0%
Total…….	126,784	100.0%	100.0%

Table 18. Hospital obstetrical utilization, Rhode Island, 2003

Hospital	Total Deliveries	Method of Delivery[1]						Cesarean Delivery Rate		Rate of Vaginal Deliveries After Previous Cesarean
		Vaginal			Cesarean					
		Total	Simple Vaginal	After Previous Cesarean	Total	Primary	After Previous Cesarean	Total	Primary	
Kent County Memorial…….	1,117	787	778	9	330	212	118	29.5%	21.4%	7.1%
Landmark Medical Center…	579	461	447	14	118	63	55	20.4%	12.4%	20.3%
Memorial Hospital……	690	504	485	19	186	114	72	27.0%	19.0%	20.9%
Newport Hospital……...	682	476	476	0	206	118	88	30.2%	19.9%	0.0%
South County Hospital……..	564	389	370	19	175	104	71	31.0%	21.9%	21.1%
Westerly Hospital…….	429	352	343	9	77	43	34	17.9%	11.1%	20.9%
Women & Infants Hospital...	9,410	6,781	6,527	254	2,629	1,672	957	27.9%	20.4%	21.0%
All Hospitals[2]……	13,476	9,751	9,427	324	3,725	2,330	1,395	27.6%	19.8%	18.8%

[1]Definitions and notice of change in definitions from previous reports appear in Appendix 4.
[2]Total includes five deliveries at Rhode Island Hospital, a non-obstetrical hospital. Of the five deliveries, one was a simple vaginal delivery and four were primary cesarean deliveries.

Table 19. Hospital average length of stay[1] by type of delivery, Rhode Island, 2003

Hospital	Type of Delivery[2]	
	Vaginal	Cesarean
Kent County Memorial Hospital……..	2.2	3.9
Landmark Medical Center……...	2.1	3.7
Memorial Hospital of Rhode Island…….	2.3	4.0
Newport Hospital…….	2.3	3.8
South County Hospital…….	2.1	3.8
Westerly Hospital…….	2.0	3.6
Women & Infants Hospital of Rhode Island…	2.5	5.0
All Hospitals[3]……...	2.4 days	4.7 days

[1]Average length of stay is computed after adjusting patients admitted and discharged on the same day to a stay of one day.
[2]Definitions appear in Appendix 4.
[3]Includes five deliveries at Rhode Island Hospital, a non-obstetric hospital. The average length of stay for the one vaginal delivery at Rhode Island Hospital was 2.0 days. The average length of stay for the four cesarean deliveries was 8.8 days.

Table 20. Hospital discharges with first-listed diagnosis of injury[1] by external cause of injury, Rhode Island, 2003

Discharges of newborn infants are excluded.

External Cause of Injury[2]	Discharges	Percent
Railway…….	0	0.0%
Motor vehicle traffic…….	835	13.5%
Motor vehicle non-traffic…….	77	1.3%
Other road vehicle…….	62	1.0%
Water transport……..	6	0.1%
Air transport……..	1	0.0%
Other vehicle…….	7	0.1%
Poisoning……..	177	2.9%
Medical and surgical misadventure……...	56	0.9%
Falls……...	3,137	50.9%
Fire……	89	1.4%
Natural and environmental factors……	74	1.2%
Submersion and suffocation……..	86	1.4%
Other unintentional……	536	8.7%
Late effects……	17	0.3%
Adverse drug reaction…..……	39	0.6%
Self-inflicted……..	541	8.8%
Assault……...	235	3.8%
Legal intervention……	0	0.0%
Undetermined intent……..	74	1.2%
War……	1	0.0%
External cause of injury not reported……	119	1.9%
All injuries…….	6,167	100.0%

[1]Includes discharges with a first-listed diagnosis ICD-9-CM codes 800-904, 910-994, 995.5, 995.81.
[2]Definitions of external cause of injury categories appear in Appendix 5.

REFERENCES

1. DeFrances, Carol J., Hall, Margaret J., and Podgornik, Michelle N. 2003 National Hospital Discharge Survey. Advance Data From Vital and Health Statistics; No. 359. Hyattsville, Maryland: National Center for Health Statistics, 2005. http://www.cdc.gov/nchs/data/ad/ad359.pdf

2. Public Health Service and Health Care Financing Administration. International Classification of Diseases, 9th Revision, Clinical Modification, 3rd ed. Washington: Public Health Service, 1989.

3. American Hospital Association: A Guide to United States Hospitals, Health Care Systems, Networks, Alliances, Health Organizations, Agencies, and Providers 2003. Chicago: Health Forum, LLC, 2004.

4. Cryan, B. Center for Health Data and Analysis, Rhode Island Department of Health. 401/222-5123.

5. Rules and Regulations for Determination of Need for New Health Care Equipment and New Institutional Health Services (R23-15-CON), State of Rhode Island and Providence Plantations, Department of Health, June 1979, amended January 2002.

6. Birkmeyer, JD, et al. (2003). Surgeon Volume and Operative Mortality in the United States, New England Journal of Medicine, 349: 2117-27.

7. *AHRQ Quality Indicators—Guide to Inpatient Quality Indicators: Quality of Care in Hospitals—Volume, Mortality, and Utilization*. Rockville, MD: Agency for Healthcare Research and Quality, 2002. Revision 2 (September 4, 2003). AHRQ Pub. No. 02-RO204. http://www.qualityindicators.ahrq.gov/downloads/iqi/iqi_guide_rev4.pdf

8. The Leapfrog Group for Patient Safety. Factsheet: Evidence-Based Hospital Referral. http://www.leapfroggroup.org/media/file/Leapfrog-Evidence-based_Hospital_Referral_Fact_Sheet.pdf

9. Healthcare Cost and Utilization Project: HCUP 2002 State Inpatient Databases (SID) Patient State of Residence Counts. Agency for Healthcare Research and Quality, Rockville, MD. Unpublished document, 05/06/2004.

Appendix 1: Diagnostic groupings and code numbers based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)*[1]

First-Listed Diagnosis[2]	Code numbers
Infectious and parasitic diseases	001-139
Septicemia	038
Neoplasms	140-239
Malignant neoplasms	140-208, 230-234
Malignant neoplasm of large intestine and rectum	153-154, 197.5
Malignant neoplasm of trachea, bronchus, and lung	162, 176.4, 197.0, 197.3
Benign neoplasms	210-229
Benign neoplasms of uterus	218-219
Endocrine, nutritional, and metabolic diseases, and immunity disorders	240-279
Diabetes mellitus	250
Volume depletion	276.5
Diseases of the blood and blood-forming organs	280-289
Anemias	280-285
Mental disorders	290-319
Psychoses	290-299
Schizophrenic disorders	295
Depressive disorder	296.2-296.3
Diseases of the nervous system and sense organs	320-389
Diseases of the circulatory system	390-459
Essential hypertension	401
Heart disease	391-392.0, 393-398, 402, 404, 410-416, 420-429
Acute myocardial infarction	410
Coronary atherosclerosis	414.0
Other ischemic heart disease	411-413, 414.1-414.9
Cardiac dysrhythmias	427
Congestive heart failure	428.0
Cerebrovascular disease	430-438
Diseases of the respiratory system	460-519
Acute bronchitis and bronchiolitis	466
Pneumonia	480-486
Chronic bronchitis	491
Asthma	493
Diseases of the digestive system	520-579
Appendicitis	540-543
Noninfectious enteritis and colitis	555-558
Intestinal obstruction	560
Diverticula of intestine	562
Cholelithiasis	574
Acute pancreatitis	577.0
Diseases of the genitourinary system	580-629
Calculus of kidney and ureter	592
Urinary tract infection	599.0
Complications of pregnancy, childbirth, and the puerperium	630-677
Females with deliveries	640-648[3], 650, 651-676[3]
Diseases of the skin and subcutaneous tissue	680-709
Cellulitis and abscess	681-682
Diseases of the musculoskeletal system and connective tissue	710-739
Osteoarthrosis and allied disorders	715
Intervertebral disc disorders	722
Congenital anomalies	740-759
Certain conditions originating in the perinatal period	760-779
Symptoms, signs, and ill-defined conditions	780-799
Injury and poisoning	800-999
Fractures, all sites	800-829
Fracture of neck of femur[4]	820
Poisonings	960-989
Certain complications of surgical and medical care	996-999
Supplementary classifications	V01-V82

[1]See Reference 2.
[2]See Reference 1.
[3]With fifth digit of "1" or "2".
[4]Excludes fractures coded as 733.1, pathologic fracture.

Appendix 2: Procedure categories and code numbers based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)*[1]

Procedures[2]	Code numbers
Operations on the nervous system	01-05
Spinal tap	03.31
Operations on the endocrine system	06-07
Operations on the eye	08-16
Operations on the ear	18-20
Operations on the nose, mouth, and pharynx	21-29
Operations on the respiratory system	30-34
Bronchoscopy with or without biopsy	33.21-33.24, 33.27
Operations on the cardiovascular system	35-39
Balloon angioplasty of coronary artery or coronary atherectomy	36.01-36.02, 36.05
Insertion of coronary artery stent(s)	36.06-36.07
Coronary artery bypass graft	36.1
Cardiac catheterization	37.21-37.23
Insertion, replacement, removal, and revision of pacemaker leads or device	37.7-37.8
Hemodialysis	39.95
Operations on the hemic and lymphatic system	40-41
Operations on the digestive system	42-54
Endoscopy of small intestine with or without biopsy	45.11-45.14, 45.16
Endoscopy of large intestine with or without biopsy	45.21-45.25
Partial excision of large intestine	45.7
Appendectomy, excluding incidental	47.0
Cholecystectomy	51.2
Lysis of peritoneal adhesions	54.5
Operations on the urinary system	55-59
Cystoscopy with or without biopsy	57.31-57.33
Operations in the male genital organs	60-64
Prostatectomy	60.2-60.6
Operations on the female genital organs	65-71
Oophorectomy and salpingo-oophorectomy	65.3-65.6
Bilateral destruction or occlusion of fallopian tubes	66.2-66.3
Hysterectomy	68.3-68.7, 68.9
Obstetrical procedures	72-75
Episiotomy with or without forceps or vacuum extraction	72.1, 72.21, 72.31, 72.71, 73.6
Artificial rupture of membranes	73.0
Medical induction of labor	73.4
Cesarean section	74.0-74.2, 74.4, 74.99
Repair of current obstetric laceration	75.5-75.6
Operations on the musculoskeletal system	76-84
Partial excision of bone	76.2-76.3, 77.6-77.8
Reduction of fracture	76.7, 79.0-79.3
Open reduction of fracture with internal fixation	79.3
Excision or destruction of intervertebral disc	80.5
Total hip replacement	81.51
Total knee replacement	81.54
Operations on the integumentary system	85-86
Debridement of wound, infection, or burn	86.22, 86.28
Miscellaneous diagnostic and therapeutic procedures and new technologies	87-99, 00
Computerized axial tomography	87.03, 87.41, 87.71, 88.01, 88.38
Arteriography and angiocardiography using contrast material	88.4-88.5
Diagnostic ultrasound	88.7
Physical therapy procedures	93.1-93.3
Respiratory therapy	93.9, 96.7
Insertion of endotracheal tube	96.04
Transfusion of blood and blood components	99.0
Injection or infusion of cancer chemotherapeutic substance	99.25

[1] *See Reference 2.*
[2] *See Reference 1.*

Appendix 3: Agency for Healthcare Research and Quality definitions[1] of selected surgical procedures based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)*[2]

For ICD-9-CM codes introduced after October 1995, the date of introduction is indicated after the code label. For example, "OCT96-" indicates the ICD-9-CM code was introduced in October 1996.

Procedure Volume Indicators

Esophageal Resection Volume (IQI 1)

Discharges with ICD-9-CM codes of 4240 through 4242 in any procedure field and a diagnosis code of esophageal cancer in any field.

ICD-9-CM esophageal resection procedure codes:

4240	ESOPHAGECTOMY NOS
4241	PARTIAL ESOPHAGECTOMY
4242	TOTAL ESOPHAGECTOMY

ICD-9-CM esophageal cancer diagnosis codes:

1500	MAL NEO CERVICAL ESOPHAG	1504	MAL NEO MIDDLE 3RD ESOPH
1501	MAL NEO THORACIC ESOPHAG	1505	MAL NEO LOWER 3RD ESOPH
1502	MAL NEO ABDOMIN ESOPHAG	1508	MAL NEO ESOPHAGUS NEC
1503	MAL NEO UPPER 3RD ESOPH	1509	MAL NEO ESOPHAGUS NOS

Exclude:

MDC 14 (pregnancy, childbirth, and puerperium) and MDC 15 (newborns and other neonates).

Pancreatic Resection Volume (IQI 2)

Discharges with ICD-9-CM codes of 526 or 527 in any procedure field and a diagnosis code of pancreatic cancer in any field.

ICD-9-CM pancreatic resection procedure codes:

526	TOTAL PANCREATECTOMY
527	RAD PANCREATICODUODENECT

ICD-9-CM pancreatic cancer diagnosis codes:

1520	MALIGNANT NEOPL DUODENUM	1572	MAL NEO PANCREAS TAIL
1561	MAL NEO EXTRAHEPAT DUCTS	1573	MAL NEO PANCREATIC DUCT
1562	MAL NEO AMPULLA OF VATER	1574	MAL NEO ISLET LANGERHANS
1570	MAL NEO PANCREAS HEAD	1578	MALIG NEO PANCREAS NEC
1571	MAL NEO PANCREAS BODY	1579	MALIG NEO PANCREAS NOS

Exclude:

MDC 14 (pregnancy, childbirth, and puerperium) and MDC 15 (newborns and other neonates).

Appendix 3 (Continued)

Pediatric Heart Surgery Volume (IQI 3)

Discharges with ICD-9-CM codes for specified heart surgery (1P) in any field or for any heart surgery (2P) plus a diagnosis code of hypoplastic left heart syndrome (1D) in any field.

Age less than 18 years.

Specified heart surgery (1P)

ICD-9-CM procedure codes:

3500	CLOSED VALVOTOMY NOS	3552	PROS REPAIR ATRIA DEF-CL
3501	CLOSED AORTIC VALVOTOMY	3553	PROST REPAIR VENTRIC DEF
3502	CLOSED MITRAL VALVOTOMY	3554	PROS REP ENDOCAR CUSHION
3503	CLOSED PULMON VALVOTOMY	3560	GRFT REPAIR HRT SEPT NOS
3504	CLOSED TRICUSP VALVOTOMY	3561	GRAFT REPAIR ATRIAL DEF
3510	OPEN VALVULOPLASTY NOS	3562	GRAFT REPAIR VENTRIC DEF
3511	OPN AORTIC VALVULOPLASTY	3563	GRFT REP ENDOCAR CUSHION
3512	OPN MITRAL VALVULOPLASTY	3570	HEART SEPTA REPAIR NOS
3513	OPN PULMON VALVULOPLASTY	3571	ATRIA SEPTA DEF REP NEC
3514	OPN TRICUS VALVULOPLASTY	3572	VENTR SEPTA DEF REP NEC
3520	REPLACE HEART VALVE NOS	3573	ENDOCAR CUSHION REP NEC
3521	REPLACE AORT VALV-TISSUE	3581	TOT REPAIR TETRAL FALLOT
3522	REPLACE AORTIC VALVE NEC	3582	TOTAL REPAIR OF TAPVC
3523	REPLACE MITR VALV-TISSUE	3583	TOT REP TRUNCUS ARTERIOS
3524	REPLACE MITRAL VALVE NEC	3584	TOT COR TRANSPOS GRT VES
3525	REPLACE PULM VALV-TISSUE	3591	INTERAT VEN RETRN TRANSP
3526	REPLACE PULMON VALVE NEC	3592	CONDUIT RT VENT-PUL ART
3527	REPLACE TRIC VALV-TISSUE	3593	CONDUIT LEFT VENTR-AORTA
3528	REPLACE TRICUSP VALV NEC	3594	CONDUIT ARTIUM-PULM ART
3531	PAPILLARY MUSCLE OPS	3595	HEART REPAIR REVISION
3532	CHORDAE TENDINEAE OPS	3598	OTHER HEART SEPTA OPS
3533	ANNULOPLASTY	3599	OTHER OP ON HRT VALVES
3534	INFUNDIBULECTOMY	3835	THOR VESSEL RESECT/ANAST
3535	TRABECUL CARNEAE CORD OP	3845	RESECT THORAC VES W REPL
3539	TISS ADJ TO VALV OPS NEC	3885	OCCLUDE THORACIC VES NEC
3541	ENLARGE EXISTING SEP DEF	390	SYSTEMIC-PULM ART SHUNT
3542	CREATE SEPTAL DEFECT	3921	CAVAL-PULMON ART ANASTOM
3550	PROSTH REP HRT SEPTA NOS	3959	REPAIR OF VESSEL NEC
3551	PROS REP ATRIAL DEF-OPN		

Or any heart surgery (2P)

ICD-9-CM procedure codes:

0050	IMPL CRT PACEMAKER SYS OCT02-	3732	HEART ANEURYSM EXCISION
0051	IMPL CRT DEFIBRILLAT SYS OCT02-	3733	EXC/DEST OTH HRT LESION
0052	IMP/REP LEAD LF VEN SYS OCT02-	3734	CATH ABLATION LES HEART
0053	IMP/REP CRT PACEMAKR GEN OCT02-	3735	PARTIAL VENTRICULECTOMY OCT97-
0054	IMP/REP CRT DEFIB GENAT OCT02-	374	HEART & PERICARD REPAIR
3601	PTCA-1 VES/ATH W/O AGENT	375	HEART TRANSPLANTATION
3602	PTCA-1 VES/ATH W AGENT	3761	PULSATION BALLOON IMPLAN
3603	OPEN CORONRY ANGIOPLASTY	3762	IMPLANT HRT ASST SYS NEC
3604	INTRCORONRY THROMB INFUS	3763	REPLACE HRT ASSIST SYST

Appendix 3 (Continued)

Pediatric Heart Surgery Volume (IQI 3)

3605	PTCA-MULTIPLE VESSEL/ATH
3606	INSERT OF COR ART STENT OCT95-
3607	INS DRUG-ELUT CORONRY ST OCT02-
3609	REM OF COR ART OBSTR NEC
3610	AORTOCORONARY BYPASS NOS
3611	AORTOCOR BYPAS-1 COR ART
3612	AORTOCOR BYPAS-2 COR ART
3613	AORTOCOR BYPAS-3 COR ART
3614	AORTCOR BYPAS-4+ COR ART
3615	INT MAM-COR ART BYPASS
3616	INT MAM-COR ART BYPASS
3617	ABD-CORON ARTERY BYPASS OCT96-
3619	HRT REVAS BYPS ANAS NEC
362	ARTERIAL IMPLANT REVASC
363	HEART REVASCULARIZAT NEC OCT98-
3631	OPEN CHEST TRANS REVASC OCT98-
3632	OTH TRANSMYO REVASCULAR OCT98-
3639	OTH HEART REVASCULAR OCT98-
3691	CORON VESS ANEURYSM REP
3699	HEART VESSEL OP NEC
370	PERICARDIOCENTESIS
3710	INCISION OF HEART NOS
3711	CARDIOTOMY
3712	PERICARDIOTOMY
3721	RT HEART CARDIAC CATH
3722	LEFT HEART CARDIAC CATH
3723	RT/LEFT HEART CARD CATH
3724	PERICARDIAL BIOPSY
3725	CARDIAC BIOPSY
3726	CARDIAC ELECTROPHY STIM
3727	CARDIAC MAPPING
3728	INTRACARDIAC ECHOCARDIO OCT02-
3729	HRT/PERICAR DX PROC NEC
3731	PERICARDIECTOMY
3764	REMOVE HEART ASSIST SYS
3765	IMP EXT PUL HRT ASST SYS OCT95-
3766	IMP IMP PUL HRT ASST SYS OCT95-
3767	IMP CARDIOMYOSTIMUL SYS OCT98-
3770	INT INSERT PACEMAK LEAD
3771	INT INSERT LEAD IN VENT
3772	INT INSER LEAD ATRI-VENT
3773	INT INSER LEAD IN ATRIUM
3774	INT OR REPL LEAD EPICAR
3775	REVISION OF LEAD
3776	REPL TV ATRI-VENT LEAD
3777	REMOVAL OF LEAD W/O REPL
3778	INSER TEMP PACEMAKER SYS
3779	REVIS OR RELOCATE POCKET
3780	INT OR REPL PERM PACEMKR
3781	INT INSERT 1-CHAM, NON
3782	INT INSERT 1-CHAM, RATE
3783	INT INSERT DUAL-CHAM DEV
3785	REPL PACEM W 1-CHAM, NON
3786	REPL PACEM 1-CHAM, RATE
3787	REPL PACEM W DUAL-CHAM
3789	REVISE OR REMOVE PACEMAK
3791	OPN CHEST CARDIAC MASSAG
3792	INJECTION INTO HEART
3793	INJECTION INTO PERICARD
3794	IMPLT/REPL CARDDEFIB TOT
3795	IMPLT CARDIODEFIB LEADS
3796	IMPLT CARDIODEFIB GENATR
3797	REPL CARDIODEFIB LEADS
3798	REPL CARDIODEFIB GENRATR
3799	OTHER HEART/PERICARD OPS

with only hypoplastic left heart syndrome (1D)
ICD-9-CM diagnosis code:

7467	HYPOPLAS LEFT HEART SYND

Exclude:

- MDC 14 (pregnancy, childbirth, and puerperium).
- Patients who underwent PDA ligation as a single cardiac procedure (diagnosis code 7470 [2D] and procedure code 3885 [3P]):

ICD-9-CM procedure code (3P), if single procedure:

3885	OCCLUDE THORACIC VES NEC*

Appendix 3 (Continued)

Pediatric Heart Surgery Volume (IQI 3)

with ICD-9-CM diagnosis code (2D):

7470	PATENT DUCTUS ARTERIOSUS

- Patients with prosthetic closures of atrial septal defects (procedure codes 3551, 3552, 3571) or ventricular septal defects (codes 3553, 3572) or atrial septal enlargement (3541 [4P]) without concomitant use of cardiopulmonary bypass (code 3961 [5P]):

ICD-9-CM procedure codes (4P):

3541	ENLARGE EXISTING SEP DEF#	3553	PROST REPAIR VENTRIC DEF#
3542	CREATE SEPTAL DEFECT	3571	ATRIA SEPTA DEF REP NEC#
3551	PROS REP ATRIAL DEF-OPN#	3572	VENTR SEPTA DEF REP NEC#
3552	PROS REPAIR ATRIA DEF-CL#		

without cardiopulmonary bypass (5P)
ICD-9-CM procedure code:

3961	EXTRACORPOREAL CIRCULAT

- Patients with PDA closure as a single cardiac procedure (procedure code 3885 [3P]) with concomitant cardiac catheterization (codes 3721, 3722, 3723, 8842, 8843 [6P]):

ICD-9-CM procedure code (3P), if single procedure:

3885	OCCLUDE THORACIC VES NEC*

with cardiac catheterization (6P)
ICD-9-CM procedure codes:

3721	RT HEART CARDIAC CATH	8842	CONTRAST AORTOGRAM
3722	LEFT HEART CARDIAC CATH	8843	CONTR PULMON ARTERIOGRAM
3723	RT/LEFT HEART CARD CATH		

- Patients with occlusion of thoracic vessel (procedure code 3885 [3P]) without congenital heart defect (diagnosis codes 7450 through 7479 [3D]):

ICD-9-CM procedure code (3P):

3885	OCCLUDE THORACIC VES NEC*

without congenital heart defect (3D)
ICD-9-CM diagnosis codes:

7450	COMMON TRUNCUS	74684	OBSTRUCT HEART ANOM NEC
74510	COMPL TRANSPOS GREAT VES	74685	CORONARY ARTERY ANOMALY
74511	DOUBLE OUTLET RT VENTRIC	74686	CONGENITAL HEART BLOCK
74512	CORRECT TRANSPOS GRT VES	74687	MALPOSITION OF HEART
74519	TRANSPOS GREAT VESS NEC	74689	CONG HEART ANOMALY NEC
7452	TETRALOGY OF FALLOT	7469	CONG HEART ANOMALY NOS

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7453	COMMON VENTRICLE
7454	VENTRICULAR SEPT DEFECT
7455	SECUNDUM ATRIAL SEPT DEF
74560	ENDOCARD CUSHION DEF NOS
74561	OSTIUM PRIMUM DEFECT
74569	ENDOCARD CUSHION DEF NEC
7457	COR BILOCULARE
7458	SEPTAL CLOSURE ANOM NEC
7459	SEPTAL CLOSURE ANOM NOS
74600	PULMONARY VALVE ANOM NOS
74601	CONG PULMON VALV ATRESIA
74602	CONG PULMON VALVE STENOS
74609	PULMONARY VALVE ANOM NEC
7461	CONG TRICUSP ATRES/STEN
7462	EBSTEIN'S ANOMALY
7463	CONG AORTA VALV STENOSIS
7464	CONG AORTA VALV INSUFFIC
7465	CONGEN MITRAL STENOSIS
7466	CONG MITRAL INSUFFICIENC
7467	HYPOPLAS LEFT HEART SYND
74681	CONG SUBAORTIC STENOSIS
74682	COR TRIATRIATUM
74683	INFUNDIB PULMON STENOSIS
7470	PATENT DUCTUS ARTERIOSUS
74710	COARCTATION OF AORTA
74711	INTERRUPT OF AORTIC ARCH
74720	CONG ANOM OF AORTA NOS
74721	ANOMALIES OF AORTIC ARCH
74722	AORTIC ATRESIA/STENOSIS
74729	CONG ANOM OF AORTA NEC
7473	PULMONARY ARTERY ANOM
74740	GREAT VEIN ANOMALY NOS
74741	TOT ANOM PULM VEN CONNEC
74742	PART ANOM PULM VEN CONN
74749	GREAT VEIN ANOMALY NEC
7475	UMBILICAL ARTERY ABSENCE
74760	UNSP PRPHERL VASC ANOMAL
74761	GSTRONTEST VESL ANOMALY
74762	RENAL VESSEL ANOMALY
74763	UPR LIMB VESSEL ANOMALY
74764	LWR LIMB VESSEL ANOMALY
74769	OTH SPCF PRPH VSCL ANOML
74781	CEREBROVASCULAR ANOMALY
74782	SPINAL VESSEL ANOMALY
74783	PERSISTENT FETAL CIRC OCT02-
74789	CIRCULATORY ANOMALY NEC
7479	CIRCULATORY ANOMALY NOS

Abdominal Aortic Aneurysm (AAA) Repair Volume (IQI 4)

Discharges with ICD-9-CM codes of 3834, 3844, or 3864 in any procedure field and a diagnosis of AAA in any field.

ICD-9-CM AAA procedure codes:

3834	AORTA RESECTION & ANAST
3844	RESECT ABDM AORTA W REPL
3864	EXCISION OF AORTA

ICD-9-CM AAA diagnosis codes:

4413	RUPT ABD AORTIC ANEURYSM
4414	ABDOM AORTIC ANEURYSM

Exclude:

MDC 14 (pregnancy, childbirth, and puerperium) and MDC 15 (newborns and other neonates).

Appendix 3 (Continued)

Coronary Artery Bypass Graft (CABG) Volume (IQI 5)

Discharges with ICD-9-CM codes of 3610 through 3619 in any procedure field.

Age 40 years and older.

ICD-9-CM CABG procedure codes:

3610	AORTOCORONARY BYPASS NOS	3615	1 INT MAM-COR ART BYPASS
3611	AORTOCOR BYPAS-1 COR ART	3616	2 INT MAM-COR ART BYPASS
3612	AORTOCOR BYPAS-2 COR ART	3617	ABD-CORON ART BYPASS OCT96-
3613	AORTOCOR BYPAS-3 COR ART	3619	HRT REVAS BYPS ANAS NEC
3614	AORTCOR BYPAS-4+ COR ART		

Exclude:

MDC 14 (pregnancy, childbirth, and puerperium) and MDC 15 (newborns and other neonates).

Percutaneous Transluminal Coronary Angioplasty (PTCA) Volume (IQI 6)

Discharges with ICD-9-CM codes of 3601, 3602, 3605, or 3606 in any procedure field.

Age 40 years and older.

ICD-9-CM PTCA procedure codes:

3601	PTCA-1 VESSEL W/O AGENT
3602	PTCA-1 VESSEL WITH AGNT
3605	PTCA-MULTIPLE VESSEL
3606	INSERT OF COR ART STENT OCT95-

Exclude:

MDC 14 (pregnancy, childbirth, and puerperium) and MDC 15 (newborns and other neonates).

Appendix 3 (Continued)

Carotid Endarterectomy Volume (IQI 7)
Discharges with an ICD-9-CM code of 3812 in any procedure field. ICD-9-CM carotid endarterectomy procedure code: 3812 HEAD & NECK ENDARTER NEC Exclude: MDC 14 (pregnancy, childbirth, and puerperium) and MDC 15 (newborns and other neonates).

[1]*These definitions were extracted from Appendix A of the following document: AHRQ Quality Indicators—Guide to Inpatient Quality Indicators: Quality of Care in Hospitals—Volume, Mortality, and Utilization. Rockville, MD: Agency for Healthcare Research and Quality, 2002. Revision 2 (September 4, 2003). AHRQ Pub. No. 02-RO204.*
[2]*See Reference 2.*

Appendix 4: Obstetrical definitions and code numbers based on the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM)[1]

1. Delivery[2]: Hospital discharges with one of the following ICD-9-CM diagnosis codes listed as a principal diagnosis or as any of 10 additional diagnoses:

    640-648* Complications Mainly Related to Pregnancy
    650 Delivery in a completely normal case
    651-659* Normal Delivery, and Other Indications for Care in Pregnancy, Labor, and Delivery
    660-669* Complications Occurring Mainly in the Course of Labor and Delivery
    670-676* Complications of the Puerperium

    * with fifth digit of 1 (delivered, with or without mention of antepartum condition) or 2 (delivered, with mention of postpartum complication)

2. Cesarean: Delivery with one of the following ICD-9-CM procedure codes listed as a principal procedure or as any of 10 additional procedures:

    74.0 Classical cesarean section
        Transperitoneal classical cesarean section
    74.1 Low cervical cesarean section
        Lower uterine segment cesarean section
    74.2 Extraperitoneal cesarean section
        Supravesical cesarean section
    74.4 Cesarean section of other specified type
        Peritoneal exclusion cesarean section
        Transperitoneal cesarean section NOS
        Vaginal cesarean section
    74.99 Other cesarean section of unspecified type
        Cesarean section NOS
        Obstetrical abdominouterotomy
        Obstetrical hysterotomy

3. Previous cesarean: Delivery with the following ICD-9-CM diagnosis code listed as a principal diagnosis or as any of 10 additional diagnoses.

    654.2 Uterine scar from previous surgery

4. Primary cesarean: Cesarean delivery with no diagnosis of previous cesarean delivery

5. Total cesarean delivery rate: Total number of cesarean deliveries divided by the total number of deliveries, expressed as a percentage

6. Primary cesarean delivery rate: Number of primary cesarean deliveries divided by (total number of deliveries minus number of previous cesarean deliveries), expressed as a percentage

7. Rate of vaginal deliveries after previous cesarean: Vaginal deliveries after previous cesarean divided by total deliveries after previous cesareans, expressed as percentage.

[1]*See Reference 2.*
[2]*Note that this definition has changed from the definition used in hospital utilization reports 2000 and 2001, which limited cases to discharges with a principal diagnosis of delivery.*

Appendix 5: Diagnostic groupings and code numbers based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)*[1]

Type of Injury	Code Numbers
Railway	E800-E807
Motor vehicle traffic	E810-E819
Motor vehicle non-traffic	E820-E825
Other road vehicle	E826-E829
Water transport	E830-E838
Air transport	E840-E845
Other vehicle	E846-E848
Place of injury[2]	E849
Poisoning	E850-E869
Medical and surgical misadventure	E870-E879
Falls	E880-E888
Fire	E890-E899
Natural environmental factors	E900-E909
Submersion and suffocation	E910-E915
Other unintentional	E916-E928
Late effects	E929
Adverse drug reaction	E930-E949
Self-inflicted	E950-E959
Assault	E960-E969
Legal intervention	E970-E978
Undetermined intent	E980-E989
War	E990-E999

[1]See Reference 2.
[2]Place of injury is supplementary to an external cause of injury code in the range E850-E869 or E880-E928.

Appendix 6: Estimated population for Rhode Island as of July 1, 2003[1]

Age Group	Population
Under 15 Years: All…	**201,636**
Female……	98,514
Male…….…...	103,122
15-44 Years: All……...	**462,694**
Female…….	233,736
Male…….…...	228,958
45-64 Years: All……...	**261,253**
Female……	134,691
Male…….…...	126,562
65 Years and Older….	**150,501**
Female……...	90,683
Male……	59,818
All Ages……	**1,076,084**
Female……...	557,624
Male…….…..	518,460

[1]*Source: Bureau of the Census, United States Department of Commerce.*

Appendix 7: Hospital discharge rate per 10,000 population[1] by first-listed diagnosis, adjusted for patient state of residence, Rhode Island, 2000-2002

Discharges of newborn infants are excluded.

First-Listed Diagnosis[2]	2000[3]	2001[3]	2002[3]
All conditions[4]	1,116.6	1,132.2	1,145.1
Infectious and parasitic diseases	25.6	24.2	24.7
Septicemia	11.4	10.7	10.6
Neoplasms	67.1	69.2	69.1
Malignant neoplasms	53.0	53.4	53.4
Malignant neoplasm of large intestine and rectum	6.9	6.8	6.7
Malignant neoplasm of trachea, bronchus, and lung	7.1	7.1	7.4
Benign neoplasms	12.5	12.1	14.2
Benign neoplasms of uterus	6.6	7.5	8.0
Endocrine, nutritional, and metabolic diseases, and immunity disorders	36.6	39.3	41.2
Diabetes mellitus	14.7	14.7	14.5
Volume depletion	12.7	14.2	14.6
Diseases of the blood and blood-forming organs	10.4	12.0	11.7
Anemias	6.5	7.6	7.3
Mental disorders	110.4	109.8	115.0
Psychoses	81.2	73.1	86.5
Schizophrenic disorders	11.0	10.4	10.2
Depressive disorder	30.3	28.8	30.2
Diseases of the nervous system and sense organs	15.3	16.1	16.2
Diseases of the circulatory system	200.3	203.8	198.9
Essential hypertension	1.7	1.8	2.1
Heart disease	142.9	147.8	145.3
Acute myocardial infarction	28.5	31.1	29.1
Coronary atherosclerosis	34.5	34.0	33.2
Other ischemic heart disease	4.8	3.8	3.2
Cardiac dysrhythmias	21.2	22.0	22.6
Congestive heart failure	37.9	40.5	39.1
Cerebrovascular disease	32.5	31.5	30.6
Diseases of the respiratory system	114.5	111.5	110.7
Acute bronchitis and bronchiolitis	7.3	7.0	6.4
Pneumonia	44.8	42.2	41.4
Chronic bronchitis	23.1	21.2	21.8
Asthma	11.3	12.9	13.1
Diseases of the digestive system	104.0	106.0	108.0
Appendicitis	8.8	8.7	9.0
Noninfectious enteritis and colitis	9.6	9.5	10.2
Intestinal obstruction	9.8	8.6	10.2
Diverticula of intestine	10.4	11.0	11.0
Cholelithiasis	10.4	10.2	10.5
Acute pancreatitis	7.9	7.9	7.5
Diseases of the genitourinary system	54.8	54.5	57.4
Calculus of kidney and ureter	5.6	5.6	6.2
Urinary tract infection	12.1	11.2	12.0
Complications of pregnancy, childbirth, and the puerperium	128.1	128.7	129.6
Females with deliveries	117.0	117.2	117.7
Diseases of the skin and subcutaneous tissue	19.8	19.6	20.0
Cellulitis and abscess	15.5	15.6	16.4
Diseases of the musculoskeletal system and connective tissue	54.0	59.1	61.3
Osteoarthrosis and allied disorders	16.0	17.8	20.5
Intervertebral disc disorders	13.3	14.2	14.2
Congenital anomalies	4.8	4.6	5.0
Certain conditions originating in the perinatal period	2.8	2.8	3.1
Symptoms, signs, and ill-defined conditions	60.3	61.4	64.4
Injury and poisoning	82.3	83.0	82.6
Fractures, all sites	34.4	32.6	32.5
Fracture of neck of femur	13.2	12.7	12.6
Poisonings	5.6	6.1	6.6
Certain complications of surgical and medical care	27.6	29.9	29.8
Supplementary classifications	24.2	24.8	22.8

[1]Population estimates for Rhode Island as of July 1, were provided by the Bureau of the Census, United States Department of Commerce. Population estimates for 2000, 2001 and 2002 were 1,050,738, 1,058,604, and 1,068,897, respectively.

[2]Diagnosis groups are defined in Appendix 1.

[3]Rhode Island rates are adjusted for patient state of residence and include discharges of Rhode Island residents from Rhode Island and Massachusetts hospitals. See "Rates" in the Definition of Terms section of this report for information regarding presentation of 2000-2002 rates.

[4]In 2000, 134 cases were missing a primary diagnosis. When these cases are excluded, the discharge rate for Rhode Island residents is 1,115.3 per 10,000 population. In 2001, 191 cases were missing a primary diagnosis. When these cases are excluded, the discharge rate for Rhode Island residents is 1,130.4 per 10,000 population. In 2002, 212 cases were missing a primary diagnosis. When these cases are excluded, the discharge rate for Rhode Island residents is 1,143.1 per 10,000 population.